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GLOBAL DATA MONITORING REPORT

JUNE 2000

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 $m\ s^{-1}$ (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

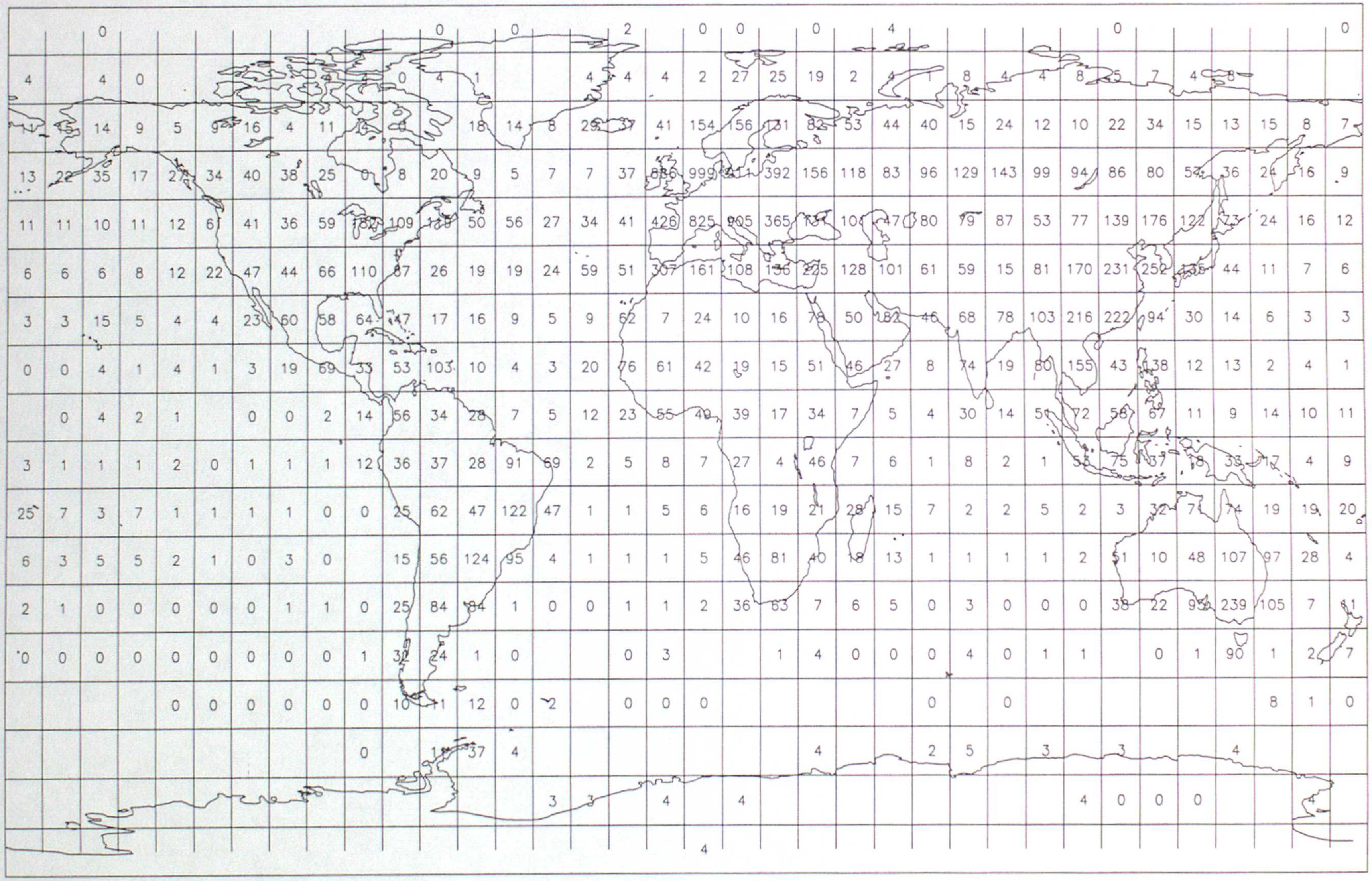
3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
C6FD9	ALL	P	SUR	25	0	0	1.6	5.6	5.9
DGAF	ALL	P	SUR	53	1	2	1.4	-5.1	5.3
DGSR	ALL	P	SUR	20	0	0	1.0	-4.2	4.3
ELUB5	ALL	P	SUR	30	0	0	0.8	10.6	10.6
ELVJ9	ALL	P	SUR	56	0	0	1.2	-4.6	4.8
FAVE	ALL	P	SUR	32	0	0	1.2	6.8	6.9
FNTS	ALL	P	SUR	29	1	3	6.0	5.1	7.8
LAFQ5	ALL	P	SUR	27	1	4	2.7	-5.6	6.2
MXAR9	ALL	P	SUR	31	0	0	1.9	4.6	5.0
PDAH	ALL	P	SUR	70	0	0	0.9	-5.4	5.5
P3YS5	ALL	P	SUR	100	0	0	1.5	4.3	4.6
UAIS	ALL	P	SUR	59	0	0	1.3	-10.8	10.9
UBCB	ALL	P	SUR	59	0	0	2.1	4.9	5.3
UBDN	ALL	P	SUR	30	0	0	0.9	4.3	4.4
UFAA	ALL	P	SUR	23	1	4	1.4	10.1	10.2
UGNQ	ALL	P	SUR	40	0	0	5.1	8.0	9.5
VCJM	ALL	P	SUR	40	40	100			
VCRT	ALL	P	SUR	34	0	0	2.0	-4.2	4.6
VDFP	ALL	P	SUR	26	26	100			
VTST	ALL	P	SUR	20	1	5	3.2	5.0	6.0
WAUU	ALL	P	SUR	24	0	0	0.9	4.3	4.4
WDZB	ALL	P	SUR	34	0	0	1.2	-5.2	5.3
3FPA6	ALL	P	SUR	20	11	55	2.5	-12.9	13.1
4XGV	ALL	P	SUR	35	0	0	1.0	6.2	6.3
42028	ALL	P	SUR	28	28	100			
8PNI	ALL	P	SUR	54	0	0	1.0	-4.7	4.8
WIND SPEED									
C6JD7	ALL	SPEED	SUR	24	0	0	7.6	10.2	12.7
C6JD9	ALL	SPEED	SUR	20	0	0	3.3	15.5	15.8
C6NI3	ALL	SPEED	SUR	32	0	0	4.9	5.2	7.2
ELHZ5	ALL	SPEED	SUR	35	0	0	4.6	5.1	6.9
ELWC6	ALL	SPEED	SUR	43	0	0	4.8	8.4	9.6
ELXU4	ALL	SPEED	SUR	27	0	0	4.2	12.8	13.4
ELXV3	ALL	SPEED	SUR	31	0	0	4.3	5.4	6.9
MXSD6	ALL	SPEED	SUR	20	0	0	6.3	5.2	8.2
OYCZ	ALL	SPEED	SUR	31	0	0	6.9	11.3	13.3
P3YS5	ALL	SPEED	SUR	89	0	0	4.2	5.3	6.8
UDYG	ALL	SPEED	SUR	80	0	0	3.2	6.7	7.4
VRUH8	ALL	SPEED	SUR	33	0	0	5.4	17.5	18.3
V2PB1	ALL	SPEED	SUR	49	0	0	4.7	6.1	7.7
9MBQ	ALL	SPEED	SUR	38	0	0	3.9	6.1	7.2
WIND DIRECTION									
ELXD6	ALL	DIRN.	SUR	29	0	0	28.5	31.2	42.3
KAKF	ALL	DIRN.	SUR	27	0	0	59.8	35.8	69.7
ZCBJ2	ALL	DIRN.	SUR	30	0	0	18.3	33.4	38.1
62131	ALL	DIRN.	SUR	56	0	0	10.4	32.9	34.5

AVAILABILITY – SHIP/SYNOP – JUNE 2000
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 20727

FIGURE 1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13 22 35 17 27 34 40 38 25 0 8 20 9 5 7 7 37 886 999 411 392 156 118 83 96 129 143 99 94 86 80 57 36 24 16 9
11 11 10 11 12 61 41 36 59 182 109 118 50 56 27 34 41 426 825 905 365 131 106 147 80 79 87 53 77 139 176 122 73 24 16 12
6 6 6 8 12 22 47 44 66 110 87 26 19 19 24 59 51 307 161 108 136 225 128 101 61 59 15 81 170 231 252 135 44 11 7 6
3 3 15 5 4 4 23 60 58 64 47 17 16 9 5 9 62 7 24 10 16 78 50 182 46 68 78 103 216 222 94 30 14 6 3 3
0 0 4 1 4 1 3 19 69 33 53 103 10 4 3 20 76 61 42 19 15 51 46 27 8 74 19 80 155 43 138 12 13 2 4 1
0 4 2 1 0 0 2 14 56 34 28 7 5 12 23 55 40 39 17 34 7 5 4 30 14 50 72 58 67 11 9 14 10 11
3 1 1 1 2 0 1 1 1 12 36 37 28 91 69 2 5 8 7 27 4 46 7 6 1 8 2 1 53 75 37 18 33 17 4 9
25 7 3 7 1 1 1 1 0 0 25 62 47 122 47 1 1 5 6 16 19 21 28 15 7 2 2 5 2 3 32 71 74 19 19 20
6 3 5 5 2 1 0 3 0 15 56 124 95 4 1 1 1 5 46 81 40 18 13 1 1 1 1 2 51 10 48 107 97 28 4
2 1 0 0 0 0 0 1 1 0 25 84 84 1 0 0 1 1 2 36 63 7 6 5 0 3 0 0 0 38 22 95 239 105 7 11
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0 0 0 0 0 0 10 11 12 0 2 0 0 0 0 0 0 0 8 1 0
0 1 37 4 4 2 5 3 3 4
3 3 4 4 4 0 0 0 4
4

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

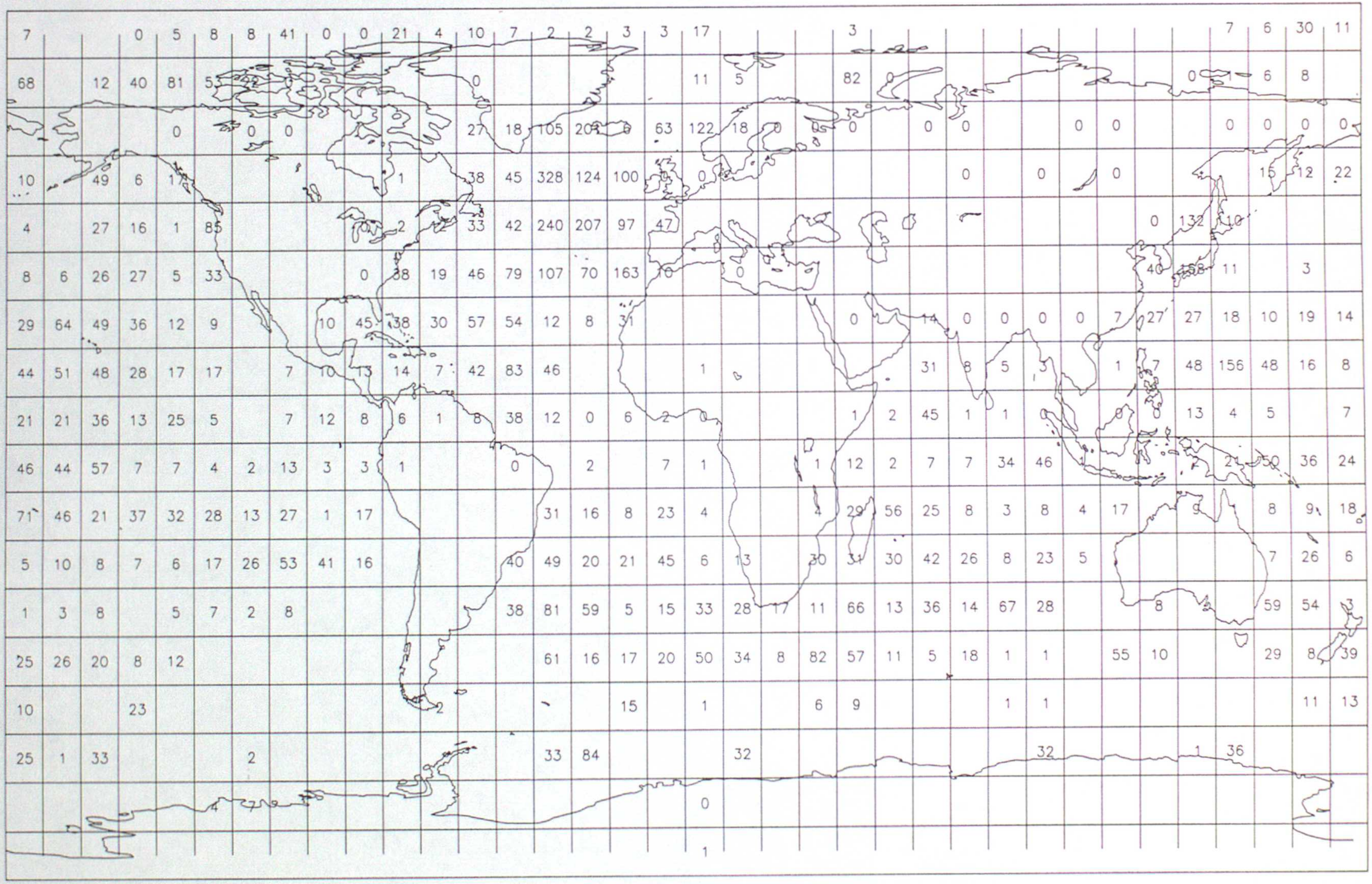
GROSS ERROR LIMIT	:15 hPa	(pressure)	
	:25 m s^{-1}	(vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
23517	21.6	64.2	ALL	P	SUR	235	9	4	2.6	4.2	4.9
31949	-34.2	-39.6	ALL	P	SUR	1141	191	17	4.5	6.3	7.7
31960	-29.2	-32.1	ALL	P	SUR	147	147	100			
32639	-28.7	-88.0	ALL	P	SUR	80	32	40	3.9	-8.6	9.5
33904	-42.1	3.4	ALL	P	SUR	283	1	0	2.8	5.2	5.9
33954	-41.6	12.8	ALL	P	SUR	160	3	2	3.3	6.9	7.7
46561	26.5	-171.4	ALL	P	SUR	207	0	0	0.7	-4.6	4.6
55577	-34.1	155.0	ALL	P	SUR	43	0	0	2.0	10.4	10.6
71513	-65.1	-26.8	ALL	P	SUR	362	198	55	7.9	-3.7	8.7
WIND SPEED											
41595	10.6	-51.0	ALL	SPEED	SUR	330	0	0	4.7	-5.1	6.9
43528	12.9	-91.4	ALL	SPEED	SUR	70	0	0	1.8	6.2	6.5
52539	23.2	133.4	ALL	SPEED	SUR	129	0	0	8.2	9.5	12.6

AVAILABILITY – DRIFTER – JUNE 2000
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 8790

FIGURE 2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68 12 40 81 5 0 11 5 82 0 0 1 6 8
0 0 0 27 18 105 203 0 63 122 18 0 0 0 0 0 0 0 0 0 0 0
10 49 6 17 1 38 45 328 124 100 0 0 0 0 0 15 12 22
4 27 16 1 85 2 2 33 42 240 207 97 47 0 132 10
8 6 26 27 5 33 0 38 19 46 79 107 70 163 10 0 40 158 11 3
29 64 49 36 12 9 10 45 38 30 57 54 12 8 31 0 14 0 0 0 0 7 27 27 18 10 19 14
44 51 48 28 17 17 7 10 13 14 7 42 83 46 1 31 8 5 3 1 7 48 156 48 16 8
21 21 36 13 25 5 7 12 8 6 1 8 38 12 0 6 2 0 1 2 45 1 1 0 0 13 4 5 7
46 44 57 7 7 4 2 13 3 3 1 0 2 7 1 1 12 2 7 7 34 46 21 50 36 24
71 46 21 37 32 28 13 27 1 17 31 16 8 23 4 4 29 56 25 8 3 8 4 17 9 8 9 18
5 10 8 7 6 17 26 53 41 16 40 49 20 21 45 6 13 30 31 30 42 26 8 23 5 7 26 6
1 3 8 5 7 2 8 38 81 59 5 15 33 28 17 11 66 13 36 14 67 28 8 59 54 3
25 26 20 8 12 61 16 17 20 50 34 8 82 57 11 5 18 1 1 55 10 29 8 39
10 23 15 1 6 9 1 1 11 13
25 1 33 2 33 84 32 32 1 36
0
1

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60010	28.3N	16.5W	2367	S7	68	0	0	60	1.7	-5.4	5.7
60445	36.2N	5.4E	1081	S8	105	0	0	1	1.1	4.4	4.5
60468	35.6N	6.2E	1052	S8	111	111	100	0			
60511	35.3N	1.4E	1127	S8	106	48	45	0	2.0	14.1	14.2
60535	34.7N	3.3E	1144	S8	80	1	1	3	1.5	-5.8	6.0
60670	24.6N	9.5E	1054	S8	107	1	1	0	0.6	9.4	9.4
61240	15.3N	1.7W	287	MS	93	54	58	0	1.2	0.4	1.3
62795	12.7N	34.1E	445	MS	86	1	1	3	1.9	-4.3	4.7
62805	11.8N	34.4E	474	M	79	3	4	6	2.3	-4.4	5.0
63602	3.1N	30.9E	1204	S	50	49	98	88	0.0	12.0	12.0
63680	0.3N	32.6E	1144	S	25	0	0	0	1.3	-8.1	8.2
68030	18.5S	25.6E	1071	8	29	0	0	0	1.0	4.4	4.5
68106	23.6S	15.1E	407	S	70	27	39	0	1.7	-0.6	1.8
68114	21.4S	15.9E	1217	M	20	20	100	0			
68338	26.9S	24.6E	1234	S8	42	42	100	0			
68396	26.5S	31.3E	641	S8	50	0	0	0	0.7	4.2	4.3
68558	30.9S	27.6E	1816	S8	58	23	40	2	1.1	0.1	1.1
68754	32.5S	27.5E	899	MS	65	30	46	2	0.9	-0.4	1.0

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	112	55	49	0	1.8	0.7	1.9
40701	39.3N	44.4E	1470	MS	89	0	0	0	1.0	6.7	6.8
40738	36.8N	54.5E	155	MS	82	67	82	0	0.8	13.7	13.7
40743	36.2N	57.7E	941	MS	100	0	0	0	0.9	-5.7	5.8
40762	35.3N	59.2E	1333	MS	99	22	22	0	1.0	-13.9	13.9
40763	35.2N	58.5E	1060	MS	82	0	0	1	1.0	-6.5	6.6
40783	32.4N	49.7E	1972	MS	79	1	1	0	0.9	-5.4	5.5
40789	33.8N	55.1E	921	MS	79	2	3	0	1.0	7.3	7.4
40812	32.0N	49.3E	372	MS	89	0	0	0	0.7	4.2	4.3
40836	30.8N	51.7E	1880	MS	67	0	0	0	1.1	7.3	7.4
40859	29.0N	53.7E	1383	MS	80	0	0	1	1.0	8.8	8.9
41254	23.1N	57.7E	1755	S8	55	55	100	0			
41396	16.0N	48.9E	700	MS	57	1	2	2	1.6	6.2	6.4
41466	13.7N	44.1E	1402	M	35	0	0	0	0.5	-6.2	6.2
44416	28.6N	81.6E	720	MS	59	0	0	0	1.0	4.3	4.4
47022	40.8N	128.2E	1200	S	35	1	3	3	1.3	4.6	4.8
51495	43.5N	91.6E	874	M	116	0	0	0	1.5	7.3	7.5
52602	38.8N	93.4E	2734	S	116	0	0	0	1.0	-4.1	4.2
52955	35.6N	100.8E	3201	S	116	0	0	0	0.9	13.0	13.0
53588	39.0N	113.5E	2898	S	116	116	100	0			
54587	39.1N	123.2E	53	M	113	0	0	1	0.9	-4.0	4.1
56146	31.6N	100.0E	3394	S	116	94	81	0	1.1	1.8	2.1
56444	28.5N	98.9E	3488	S	116	6	5	0	0.7	13.3	13.3
56462	29.0N	101.5E	2994	S	114	1	1	0	1.3	9.4	9.5
57816	26.6N	106.7E	1074	MS	115	97	84	23	0.5	-14.0	14.0

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	30	0	0	0	1.0	-6.0	6.1
82704	7.6S	72.7W	170	MS	77	0	0	0	1.4	-4.0	4.2
82927	9.9S	58.3W	250	MS	41	0	0	100	1.7	-11.1	11.2
83214	10.3S	54.9W	285	MS	77	0	0	0	1.0	-8.0	8.1
83235	12.4S	46.4W	604	MS	84	1	1	2	1.2	6.0	6.1
83319	14.7S	52.4W	315	MS	80	0	0	0	0.8	-5.7	5.8
83332	14.1S	46.4W	826	MS	82	0	0	0	1.1	13.0	13.0
83376	15.9S	49.0W	740	MS	83	0	0	0	0.7	-4.3	4.4
83408	14.3S	43.8W	447	MS	73	1	1	1	0.6	10.1	10.1
83488	17.8S	42.9W	1097	MS	83	83	100	0			

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83531	18.6S	46.5W	940	MS	79	0	0	0	0.8	-7.4	7.4
83587	19.9S	43.9W	850	MS	81	0	0	0	0.7	-6.8	6.8
83704	22.3S	53.9W	369	MS	83	0	0	0	0.8	-9.8	9.8
83773	23.1S	48.9W	793	MS	80	0	0	0	0.8	-9.8	9.8
83836	25.5S	50.6W	837	MS	83	0	0	0	0.8	-5.0	5.1
83953	30.9S	55.5W	231	MS	82	0	0	1	1.4	-11.3	11.4
84377	3.8S	73.3W	125	MS	85	0	0	0	1.2	4.0	4.2
84401	5.2S	80.6W	49	MS	86	0	0	1	1.3	4.1	4.3
84425	5.9S	76.1W	179	MS	42	0	0	10	2.6	5.2	5.8
84455	6.5S	76.4W	281	MS	63	0	0	0	1.1	4.6	4.7
84472	7.1S	78.5W	2620	S	40	1	3	0	0.9	-5.4	5.5
84474	7.2S	76.7W	350	S	39	0	0	0	1.0	9.1	9.2
84542	9.4S	77.6W	2750	S	38	2	5	21	1.4	5.1	5.3
84686	13.6S	72.0W	3248	S	85	0	0	0	0.9	-4.4	4.5
84688	13.7S	73.4W	3444	S	38	1	3	3	1.9	-12.1	12.2
84720	14.9S	75.0W	567	MS	63	0	0	0	1.0	4.3	4.4
84782	18.1S	70.3W	468	MS	68	1	1	1	1.4	7.9	8.0
85141	14.5S	67.6W	204	MS	55	0	0	2	1.7	4.6	4.9
85230	17.6S	69.6W	4054	S	52	2	4	8	2.6	5.0	5.6
85264	18.5S	64.1W	1998	S	55	55	100	0			
85312	19.8S	63.9W	992	S	45	4	9	7	1.3	-9.3	9.4
85406	18.3S	70.3W	55	M	108	0	0	0	1.3	5.1	5.3
85432	22.5S	68.9W	2320	S8	78	0	0	1	1.6	5.5	5.7
85836	43.6S	71.8W	277	M	34	0	0	0	1.3	5.2	5.4

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
70194	66.6N	145.3W	131	S	94	72	77	0	0.6	-0.5	0.8
71498	66.1N	96.5W	28	MS	107	20	19	73	4.9	-6.5	8.1
71506	66.9N	136.3W	600	MS	116	106	91	0	0.2	-14.7	14.7
72340	34.8N	92.3W	165	MS	109	0	0	0	0.8	10.5	10.5
76118	30.4N	109.7W	1040	MS	32	0	0	0	0.9	-10.5	10.5
76632	20.1N	98.7W	2417	MS	29	0	0	0	0.5	-5.0	5.0
76658	19.2N	103.7W	494	MS	45	0	0	0	1.0	6.9	7.0
76773	17.8N	97.8W	1680	MS	51	1	2	0	0.7	8.1	8.1
76775	17.1N	96.7W	1550	MS	65	0	0	0	0.7	4.8	4.9
76845	16.7N	92.6W	2276	MS	33	33	100	0			
78229	23.1N	81.3W	3	MS	24	0	0	0	0.7	-5.1	5.1

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91163	21.9N	159.6W	7	8	329	329	100	0			
91764	14.3S	170.8W	122	M	139	13	9	39	0.7	-13.7	13.7
92010	6.1S	145.4E	1587	M	45	0	0	2	1.3	9.9	10.0
92068	10.0S	149.4E	1005	MS	50	2	4	36	1.0	-4.2	4.3
94868	37.8S	145.0E	35	MS	116	0	0	100	0.7	10.6	10.6
95296	17.1S	152.0E	5	MS	116	0	0	23	1.2	4.1	4.3
95611	34.6S	118.5E	107	MS	112	4	4	9	2.3	10.0	10.3
96505	3.7N	115.7E	912	S8	23	23	100	0			
96751	6.7S	106.9E	920	S8	79	5	6	0	0.9	-4.8	4.9
97378	10.7S	123.1E	1	MS	53	47	89	98	0.3	-14.6	14.6

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.8N	9.7E	671	MS	85	0	0	0	1.0	7.8	7.9
08568	40.4N	7.6W	1380	S8	337	18	5	9	7.2	-0.7	7.2
10557	50.5N	11.1E	845	S8	348	348	100	0			
12140	54.4N	18.7E	2	MS	110	0	0	0	0.6	7.7	7.7
13269	44.3N	19.9E	176	MS	114	0	0	0	0.9	7.5	7.6
14554	44.9N	18.4E	140	S	58	0	0	2	0.9	-12.6	12.6
14650	43.8N	18.0E	967	S	58	3	5	43	2.2	-11.0	11.2
16470	36.8N	12.0E	191	MS	82	0	0	0	0.7	-4.1	4.2
17092	39.8N	39.5E	1218	S8	115	0	0	0	1.5	6.8	7.0
17203	38.9N	40.5E	1177	S8	116	0	0	1	1.3	4.1	4.3

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89208	90.0S	0.0W	2835	M	46	30	65	0	0.8	2.9	3.0
89264	71.4S	68.9W	780	S	243	0	0	0	1.6	6.8	7.0
89266	72.2S	60.3W	91	M	243	201	83	0	0.3	-14.3	14.3
89272	75.0S	70.8W	1395	S	234	234	100	0			
89327	73.2S	127.1W	30	S	239	239	100	0			
89612	66.3S	110.8E	390	S	164	53	32	0	1.7	-1.8	2.5
89744	74.0S	43.0E	3353	S	254	0	0	0	0.8	7.6	7.6
89769	78.5S	168.4E	50	S	376	376	100	0			
89805	74.1S	109.8E	3096	S	59	17	29	0	2.5	2.7	3.7
89847	67.6S	146.0E	30	S	294	1	0	0	1.9	-8.9	9.1

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	51	0	45	1.3	0.3	50	0	46	0	5.2	1.0
AAH	838	0	37	1.1	0.4	834	0	38	0	5.1	1.1
AAL	6545	0	18	1.3	0.1	6484	0	19	0	7.3	1.2
AAR	1543	0	6	1.5	-0.4	1537	0	7	0	7.6	0.6
ACA	2172	1	3	1.8	0.1	2190	0	2	0	6.5	0.8
ACI	46	2	54	2.1	0.4	46	0	54	0	13.0	-0.2
AEA	678	0	4	2.0	0.4	673	0	5	0	7.3	1.0
AEL	418	1	12	1.6	-0.1	410	0	11	0	7.3	-0.2
AEY	116	1	4	2.1	0.8	114	0	3	0	7.1	1.0
AFL	530	1	4	2.0	0.3	529	0	4	0	7.3	0.6
AFR	1986	1	10	1.5	-0.1	2002	0	10	0	7.4	0.6
AIH	234	1	6	1.5	0.0	234	0	5	0	6.8	0.6
AJM	216	0	5	1.7	-0.4	222	0	5	0	8.0	0.9
AMM	103	0	5	1.5	0.7	100	0	7	0	8.0	1.2
AMT	1150	0	44	1.9	1.4	1150	0	44	0	5.5	1.1
AMX	310	1	3	1.6	0.5	309	1	6	0	8.7	1.0
ANA	1670	0	10	1.5	0.2	1655	0	11	0	6.6	0.5
ANZ	5497	0	36	1.5	0.2	5476	0	36	0	7.3	0.7
AOM	1072	0	8	1.6	0.7	1081	0	9	0	7.6	1.1
ARG	80	4	31	3.2	0.1	88	0	25	0	9.4	0.6
AVA	587	1	3	1.6	0.6	586	0	3	0	7.0	0.8
AVN	125	2	50	1.2	0.2	129	0	51	0	10.6	-1.4
AXF	52	4	37	1.1	-0.3	53	0	36	0	7.4	-0.8
AZA	689	1	7	1.9	0.2	678	0	7	0	8.0	0.8
BAL	276	1	12	1.3	-0.3	275	0	12	0	7.1	0.6
BAW	1544	0	7	1.9	0.3	1535	0	7	0	6.2	0.7
BBB	30	0	3	1.8	-0.2	31	0	3	0	7.3	1.4
BLC	22	5	50	2.3	1.4	22	0	41	0	9.6	3.9
BLX	41	0	7	2.2	-0.9	41	0	7	0	10.3	2.5
BWA	342	0	4	1.8	1.4	345	0	6	0	8.2	1.4
CAL	460	0	5	1.6	0.5	468	0	6	0	8.3	0.4
CCA	350	1	100	2.4	0.6	377	1	100	0	11.2	-0.1
CDN	2139	0	7	1.5	-0.2	2141	0	8	0	6.7	0.6
CES	418	1	6	1.5	0.3	436	1	100	0	8.6	0.4
CFG	859	0	3	1.6	-0.8	836	0	4	0	7.1	0.6
CLX	439	0	4	1.9	-0.3	447	0	5	0	7.3	0.4
CMI	243	0	5	1.8	0.7	244	0	4	0	8.9	2.0
CMM	675	0	8	1.7	0.2	671	0	8	0	6.5	0.5
COA	1339	0	27	1.2	0.3	1335	0	29	0	8.3	1.6
CPA	81	7	15	1.7	0.9	80	0	6	0	7.7	0.7
CRL	632	1	6	1.7	0.7	625	0	7	0	8.2	1.2
CSN	104	0	6	1.7	0.8	107	0	6	0	6.6	0.8
CTB	138	1	2	0.9	0.1	139	0	1	0	5.2	0.7
CUB	160	2	3	1.7	1.0	158	0	3	0	8.2	1.0
DAL	4013	0	33	1.4	0.3	4050	0	34	0	6.8	0.8
DBY	705	0	3	1.4	-0.5	698	0	2	0	6.7	0.7
DCS	44	2	7	1.5	0.1	43	0	7	0	6.1	0.7
DLH	2030	0	6	1.7	-0.1	1989	0	6	0	6.4	1.0
EEZ	82	0	100	1.5	0.5	81	0	7	0	6.8	0.1
EIA	306	1	41	1.9	0.2	299	0	42	0	9.2	1.7
EIN	39	0	0	1.1	0.3	39	0	3	0	7.1	0.1
ELY	193	1	4	1.5	-0.2	198	0	3	0	7.3	0.9
EVA	1151	1	3	1.4	-0.2	1153	0	4	0	7.7	0.4
EWW	148	0	4	1.4	0.0	152	0	5	0	7.6	1.2
FDX	1662	0	13	1.4	0.5	1687	0	14	0	7.0	0.9
FIN	388	0	2	1.4	0.4	373	0	3	0	6.8	0.8
FJI	594	2	46	1.5	0.6	579	0	46	0	8.4	0.8
FOM	554	0	33	1.5	0.4	553	0	33	0	6.3	0.1
FWQ	36	0	53	0.9	0.3	36	6	56	0	6.0	-0.8

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GAF	129	0	3	1.5	0.2	127	0	5	0	7.5	1.2
GCO	155	1	6	1.7	0.0	160	1	36	0	17.7	2.6
GHA	65	2	2	1.3	-0.4	63	0	6	0	12.3	3.2
GRL	65	2	3	1.3	0.5	64	2	6	0	5.6	-0.1
GTI	248	0	9	1.9	0.0	254	0	10	0	8.8	0.4
HAL	4588	0	39	1.2	0.4	4508	0	39	0	8.2	1.7
HLF	94	0	2	1.3	-0.7	88	0	6	0	8.1	-0.3
HRH	274	0	60	1.2	-0.1	274	0	61	0	8.7	1.0
IBE	2963	1	9	1.7	0.7	2908	0	10	0	7.6	0.7
ICE	1110	0	3	1.6	0.2	1079	0	5	0	7.7	0.9
IWD	210	0	4	1.2	-0.5	208	0	4	0	7.5	1.4
JAA	62	2	3	2.1	1.7	61	0	0	0	5.3	1.9
JAL	6651	0	4	1.6	0.3	6574	0	5	0	7.0	0.8
JAZ	706	0	2	1.8	1.4	696	0	2	0	6.7	0.8
JKK	284	0	5	1.3	0.0	260	0	10	0	9.0	0.2
JMC	291	0	6	1.8	1.3	274	0	7	0	7.8	1.0
KAL	3587	0	7	1.5	-0.1	3550	0	8	0	8.0	0.7
KLM	2679	0	11	1.6	0.4	2679	0	12	0	6.7	0.8
LAN	81	2	11	2.2	0.3	82	0	13	0	13.6	0.7
LAP	81	1	26	2.4	0.6	81	0	27	0	13.1	2.5
LDA	113	1	6	1.8	0.1	110	0	5	0	6.6	0.9
LDI	589	0	100	1.5	-0.9	596	0	5	0	6.5	0.4
LIB	425	2	4	1.7	0.8	420	0	4	0	8.1	0.0
LOT	260	0	2	1.7	-0.9	260	0	4	0	6.8	0.9
LPR	39	3	10	2.5	0.4	38	0	8	0	12.6	1.3
LTU	832	0	5	1.8	-0.1	816	0	5	0	6.6	0.7
MAS	545	1	6	1.5	0.2	549	0	5	0	7.8	0.8
MMZ	22	0	23	2.3	1.3	22	0	32	0	18.4	-0.9
MON	168	0	4	1.4	0.1	160	1	6	0	5.6	0.9
MPD	331	0	3	1.2	0.0	330	0	3	0	5.9	1.1
MPH	1002	0	4	1.9	-0.7	996	0	5	0	7.2	0.7
NCA	695	0	3	1.7	0.6	689	0	4	0	7.8	0.3
NWA	11512	0	9	1.7	0.7	11398	0	10	0	7.2	0.6
OAE	341	1	45	1.4	-0.3	342	0	44	0	6.8	1.4
PAC	347	1	24	1.6	0.3	351	0	23	0	7.0	0.9
PAL	1446	0	11	1.4	-0.1	1386	0	12	0	7.9	0.5
PAO	380	1	61	1.5	0.3	380	0	61	0	8.9	0.8
PUA	25	4	36	3.9	-1.2	26	0	31	0	16.4	-2.1
QFA	3401	1	54	1.4	0.4	3379	0	54	0	7.2	0.3
RAF	80	3	5	2.3	1.3	79	0	4	0	10.3	0.9
RAM	78	4	8	1.9	-0.2	76	0	4	0	8.1	0.4
RCH	300	0	17	2.2	0.7	280	0	20	0	9.8	0.9
RJA	79	0	5	1.8	-0.5	80	0	5	0	8.0	1.6
RKA	109	3	11	1.3	-0.7	109	1	12	0	8.6	-0.7
ROY	180	1	8	1.7	-0.4	185	1	15	0	12.2	0.8
RRR	224	0	5	1.7	0.2	226	0	7	0	8.6	0.8
RYN	528	2	45	1.6	0.8	535	0	44	0	5.3	0.5
RZO	307	1	7	1.9	-0.7	305	0	7	0	8.0	0.1
SAA	401	1	5	1.5	-0.2	392	0	3	0	6.0	0.6
SAS	1592	0	30	1.7	-0.2	1584	0	31	0	6.4	1.0
SIA	601	0	3	1.6	0.4	599	1	4	0	6.6	0.2
SLR	251	0	8	1.5	-1.0	251	0	10	0	7.2	0.5
SNB	37	0	3	2.0	-0.3	40	0	3	0	7.1	-0.8
SOO	96	5	48	5.5	5.4	96	0	41	0	5.3	0.1
SVA	132	0	3	2.0	-0.1	140	0	6	0	7.9	1.2
SWR	37	0	16	1.9	0.8	40	0	13	0	5.1	0.6
TAM	20	0	5	2.2	0.9	21	0	24	0	19.2	-1.2
TAP	734	1	7	1.6	-0.3	733	0	7	0	8.3	1.1
TBA	22	0	45	2.3	-0.2	23	4	43	0	13.2	4.6

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TCU	51	0	2	1.8	-1.0	52	0	2	0	7.5	0.7
THA	320	1	7	1.7	0.1	323	0	9	0	9.0	0.6
THT	117	1	36	2.4	0.2	112	0	31	0	7.3	2.1
TPA	32	3	3	1.0	0.1	32	3	6	0	7.7	-1.0
TSC	221	1	2	1.8	0.9	224	0	6	0	10.4	3.1
TWA	1966	0	23	1.4	0.2	1917	0	24	0	7.0	1.1
UAL	141673	0	100	1.1	-0.1	141528	0	100	0	5.1	0.6
UPS	1544	0	23	1.5	0.3	1546	0	24	0	6.8	0.8
USA	219	3	5	1.7	0.3	184	0	3	0	6.8	1.3
VIR	637	1	3	1.6	-0.2	634	0	4	0	7.3	0.9
VKG	63	2	8	1.8	0.0	62	0	6	0	6.6	-0.5
VRG	303	4	35	2.5	0.4	336	0	100	0	14.7	2.7
VVR	70	0	29	3.2	1.1	71	0	28	0	12.2	0.6
WOA	217	1	7	1.3	0.3	229	0	7	0	6.7	1.0
YSS	39	0	15	1.9	0.4	40	0	13	0	5.5	1.0
AN	20750	0	18	1.3	0.2	20750	0	18	0	5.2	0.3
AR	1081	0	100	2.6	2.3	1081	0	100	0	5.6	0.7
BA	503	0	8	1.3	0.5	499	0	8	0	4.4	0.7
EU	81932	0	30	1.3	0.2	81932	0	30	0	4.7	0.5
KL	6172	0	15	1.4	0.9	6143	0	15	0	5.2	0.8
LH	2626	0	7	1.7	1.2	2611	0	7	0	5.6	1.0
MK	3971	0	5	1.7	1.2	3951	0	5	0	6.8	0.3
NZ	2338	0	9	1.4	-0.2	2338	0	10	0	5.6	0.2
QF	30780	0	12	1.3	0.6	30789	0	12	0	5.4	0.7
SA	1890	0	5	1.8	1.3	1881	0	4	0	6.5	0.4
SV	1017	0	3	2.4	2.3	1006	0	100	0	6.5	0.3
WA	375	7	10	1.5	0.7	365	7	100	0	9.4	0.5
XX	4749	3	8	1.4	0.4	5396	0	100	0	9.7	1.3
N	738	3	18	2.5	1.0	773	0	16	0	7.8	1.0
US ACARS	543679	0	46	1.2	0.4	543708	0	47	0	5.4	0.7

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	533	1	11	1.4	0.1	527	0	11	0	8.2	0.7
AAR	72	1	21	1.1	-0.5	67	0	21	0	6.6	2.2
AFL	34	0	6	2.1	1.4	34	3	9	0	6.5	1.7
AFR	63	0	19	1.2	0.4	64	0	23	0	9.3	1.6
AMT	39	0	44	2.2	1.8	39	0	44	0	7.3	2.9
ANA	44	0	70	0.9	0.0	45	0	69	0	3.9	1.0
ANO	59	0	51	1.1	0.3	59	0	51	0	4.0	-0.1
ANP	28	0	79	0.9	0.5	28	0	79	0	4.1	1.0
ANZ	216	14	44	1.9	0.0	216	1	41	0	14.0	3.5
AOM	77	1	8	2.0	1.2	78	0	9	0	7.2	1.1
AVN	29	0	48	1.2	0.0	29	0	48	0	8.1	-1.3
AXF	52	0	31	1.1	0.0	52	0	33	0	6.5	1.4
AZA	25	0	4	1.1	0.5	26	0	4	0	7.5	1.0
BAF	36	0	17	1.2	0.5	37	0	16	0	10.8	-0.3
CAL	23	0	22	1.0	0.1	23	0	30	0	16.0	1.2
CDN	24	0	8	1.5	0.2	24	0	13	0	14.9	-1.1
CFC	199	3	10	2.4	1.4	203	0	8	0	9.7	1.8
CFG	34	3	18	1.2	-0.9	34	0	21	0	7.5	1.9
CLX	24	0	0	1.2	-0.3	24	0	4	0	8.7	2.5
CMI	77	0	4	2.2	0.3	87	0	3	0	10.1	1.6
COA	147	1	20	1.5	0.3	151	0	30	0	12.6	3.6
CTM	36	0	25	3.3	-2.5	36	0	22	0	10.6	1.2
CUB	41	2	5	1.5	1.2	42	0	5	0	8.1	-0.7
DAL	261	0	28	1.2	0.1	263	0	30	0	6.4	0.7
DHL	49	0	63	6.3	-6.2	48	0	29	0	15.7	4.9
DLH	255	1	11	1.4	0.5	250	0	12	0	8.1	0.8
EIA	49	2	33	1.0	0.2	48	0	31	0	8.5	1.8
EVA	141	0	25	1.4	-0.3	140	0	26	0	6.3	0.4
EWW	66	0	11	1.9	0.0	64	0	8	0	8.5	0.5
FDX	485	1	8	1.4	0.7	494	0	9	0	7.3	0.9
FWQ	110	2	58	1.0	0.4	114	2	59	0	7.5	0.9
FXI	45	2	16	3.4	2.0	44	0	7	0	12.4	4.8
GAF	55	4	5	1.5	0.5	54	0	2	0	6.8	2.0
GCO	273	0	4	1.4	0.3	277	0	39	0	16.7	5.8
GHA	54	15	20	1.6	-0.6	53	0	9	0	10.7	2.5
GTI	20	0	10	1.5	0.0	20	0	15	0	8.9	1.5
HAL	139	3	46	1.3	0.3	137	0	47	0	9.8	1.9
HLA	26	12	15	2.3	0.0	29	0	14	0	13.6	4.8
HRH	32	0	66	2.0	0.7	34	0	65	0	7.3	2.5
IBE	113	2	20	1.4	0.5	112	0	20	0	6.3	0.8
ICE	112	1	7	1.3	-0.2	110	1	7	0	6.2	0.8
JAL	71	1	17	1.6	0.0	66	0	17	0	8.1	0.5
JAZ	103	0	2	1.8	1.4	103	0	3	0	7.5	-0.1
JMC	32	0	6	2.4	1.2	30	0	7	0	7.9	1.0
KAL	137	6	26	1.2	-0.3	137	0	26	0	8.6	2.5
KIW	91	1	44	2.1	1.2	86	0	43	0	8.0	-1.7
KLM	59	0	5	1.3	0.6	60	0	7	0	6.0	0.5
MAS	67	1	27	1.2	-0.2	67	0	25	0	6.0	0.1
MPH	53	0	4	1.3	0.1	54	0	9	0	8.2	0.6
NAT	26	0	4	1.4	0.1	26	0	4	0	7.8	-1.4
NCA	111	0	2	1.7	0.5	110	0	2	0	7.1	0.9
NWA	454	2	9	1.7	0.6	450	0	7	0	7.5	0.1
OAE	20	0	45	0.9	-0.5	20	0	45	0	7.3	3.3
PAC	54	0	22	2.2	0.7	54	0	20	0	8.8	2.1
PAL	36	3	11	1.5	-0.6	33	0	6	0	4.9	1.1
QFA	187	14	60	1.2	0.4	196	2	55	0	11.1	2.0
RCH	199	1	17	2.1	0.8	203	0	22	0	11.6	2.8
RRR	204	1	19	4.1	3.3	205	0	11	0	9.4	0.2
RYN	26	0	35	1.1	0.4	25	0	36	0	5.5	1.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SAA	60	0	2	2.0	-1.3	59	0	0	0	4.7	-0.1
SAS	68	1	56	1.0	0.3	69	0	55	0	5.3	1.1
SIA	50	0	8	0.8	0.0	49	0	8	0	5.1	1.4
SWR	77	0	9	1.9	0.2	78	0	15	0	14.2	4.2
TWA	27	0	4	1.6	1.0	25	0	4	0	6.6	-0.6
UAL	214398	0	100	1.2	0.0	214116	0	100	0	4.2	0.4
UPS	141	1	15	1.6	0.4	141	1	14	0	7.1	0.7
VHJ	114	0	1	1.9	-0.1	113	0	4	0	8.8	-0.6
VTA	50	0	8	1.8	-0.5	53	0	13	0	6.5	1.9
VVP	59	7	44	2.6	-0.4	56	0	36	0	5.9	0.8
VVR	36	6	39	2.2	1.3	40	0	38	0	4.9	1.0
AN	71502	0	66	1.2	0.2	71502	0	66	0	4.1	0.2
AR	1163	1	100	2.1	1.5	1159	0	100	0	5.5	0.8
BA	509	0	65	1.3	0.1	504	0	65	0	3.8	0.7
EU	507481	0	79	1.1	0.3	507231	0	79	0	3.5	0.1
KL	4900	0	54	1.2	0.6	4874	0	54	0	3.8	0.1
LH	803	0	62	1.2	0.5	800	0	62	0	4.0	0.4
MK	3222	0	51	1.5	0.7	3211	0	51	0	4.8	0.5
NZ	7351	0	53	1.5	0.5	7351	0	54	0	5.7	0.5
QF	24271	0	56	1.2	0.5	24281	0	56	0	4.3	0.0
SA	1540	2	56	1.3	0.4	1530	0	56	0	6.2	1.6
SV	1802	0	49	3.2	2.7	1792	0	100	0	5.2	1.6
WA	42	14	24	2.4	0.6	42	5	100	0	14.8	-0.6
XX	839	6	11	1.8	0.1	884	0	100	0	11.4	1.9
US ACARS	515890	0	52	1.2	0.3	514098	0	54	0	4.6	0.3

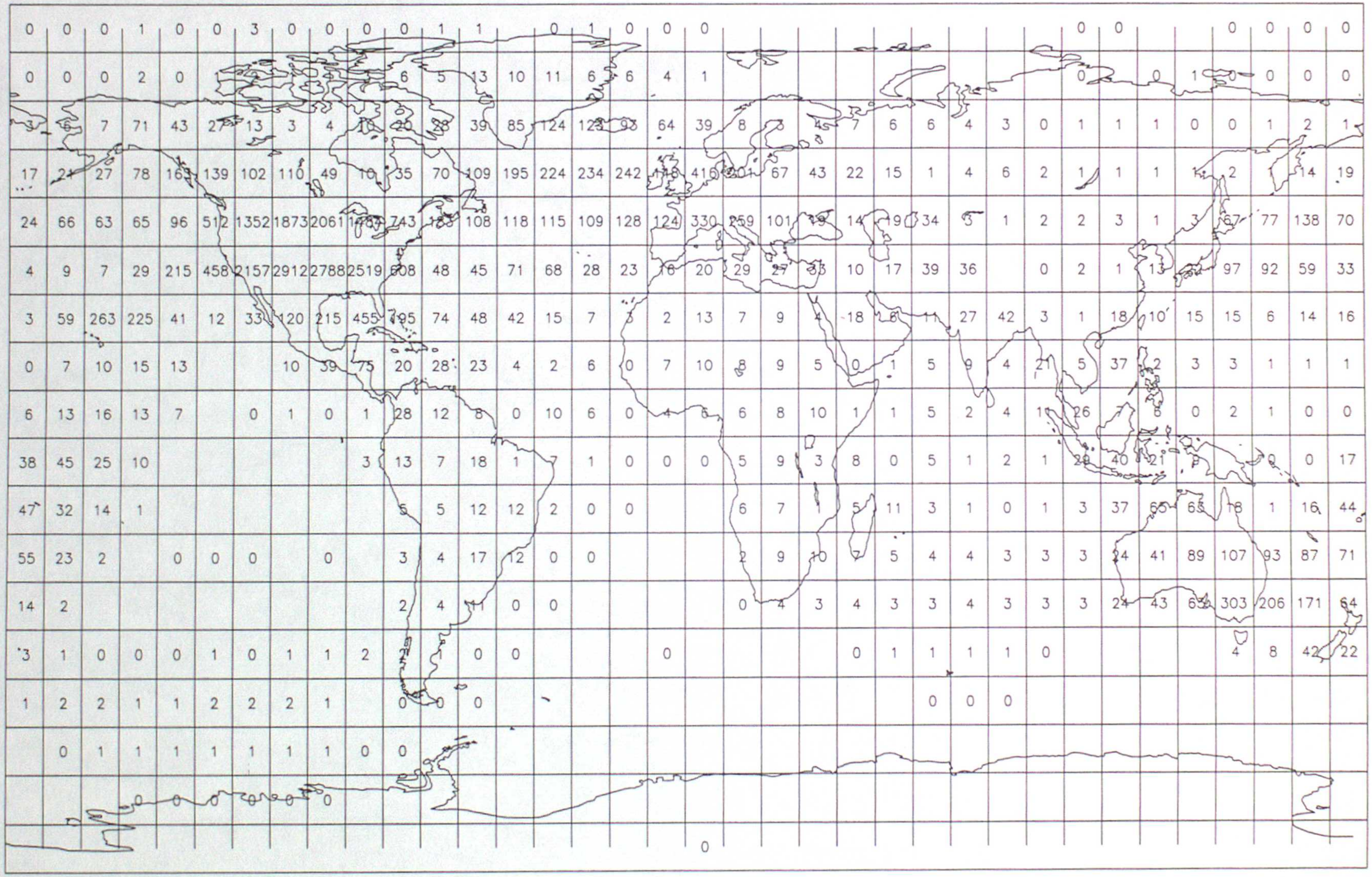
MEAN DAILY COUNT OF AIRCRAFT 300 – 150 HPA

JUNE 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 31732

FIGURE 3A



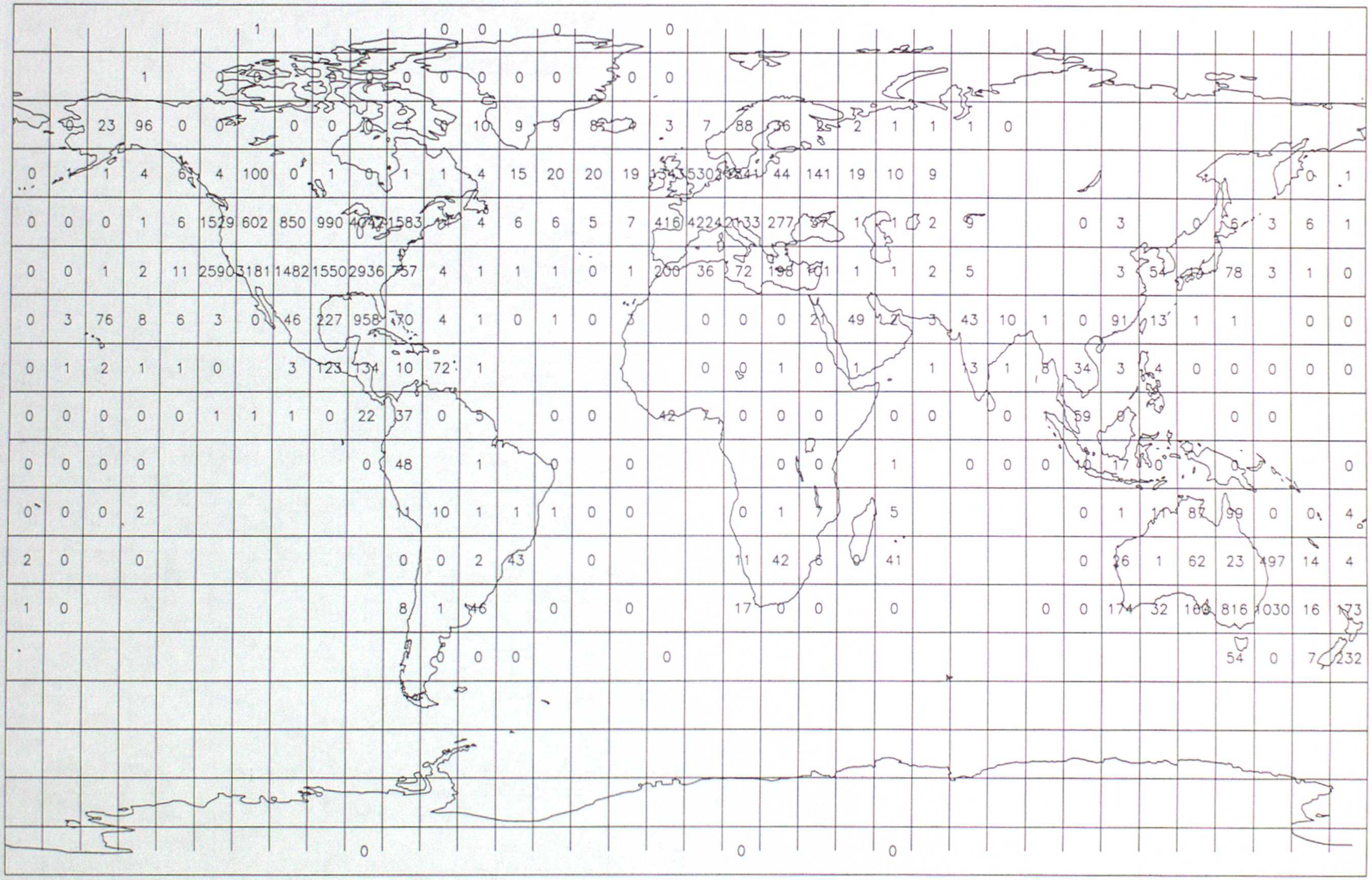
MEAN DAILY COUNT OF AIRCRAFT 1000 – 301 HPA

FIGURE 3B

JUNE 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 45351



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0 0 0 1 6 1529 602 850 990 4747 1583 11 4 6 6 5 7 416 4224 2133 277 97 1 1 2 9 0 3 0 6 3 6 1
0 0 1 2 11 2590 3181 1482 1550 2936 757 4 1 1 1 0 1 200 36 72 198 101 1 1 2 5 3 54 13 78 3 1 0
0 3 76 8 6 3 0 46 227 958 470 4 1 0 1 0 3 0 0 0 21 49 2 3 43 10 1 0 91 13 1 1 0 0
0 1 2 1 1 0 3 123 134 10 72 1 0 0 1 0 1 1 13 1 8 34 3 4 0 0 0 0 0
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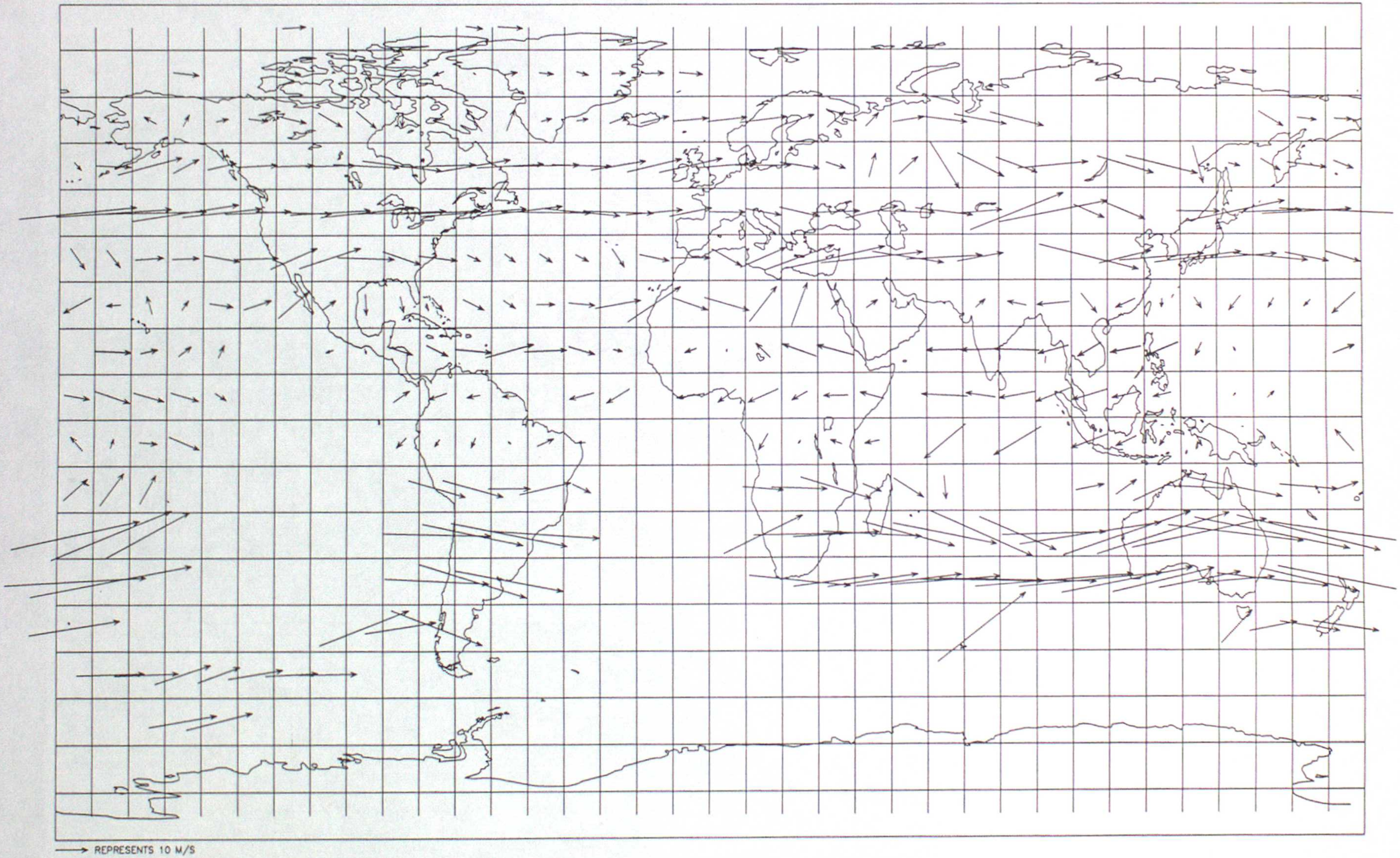
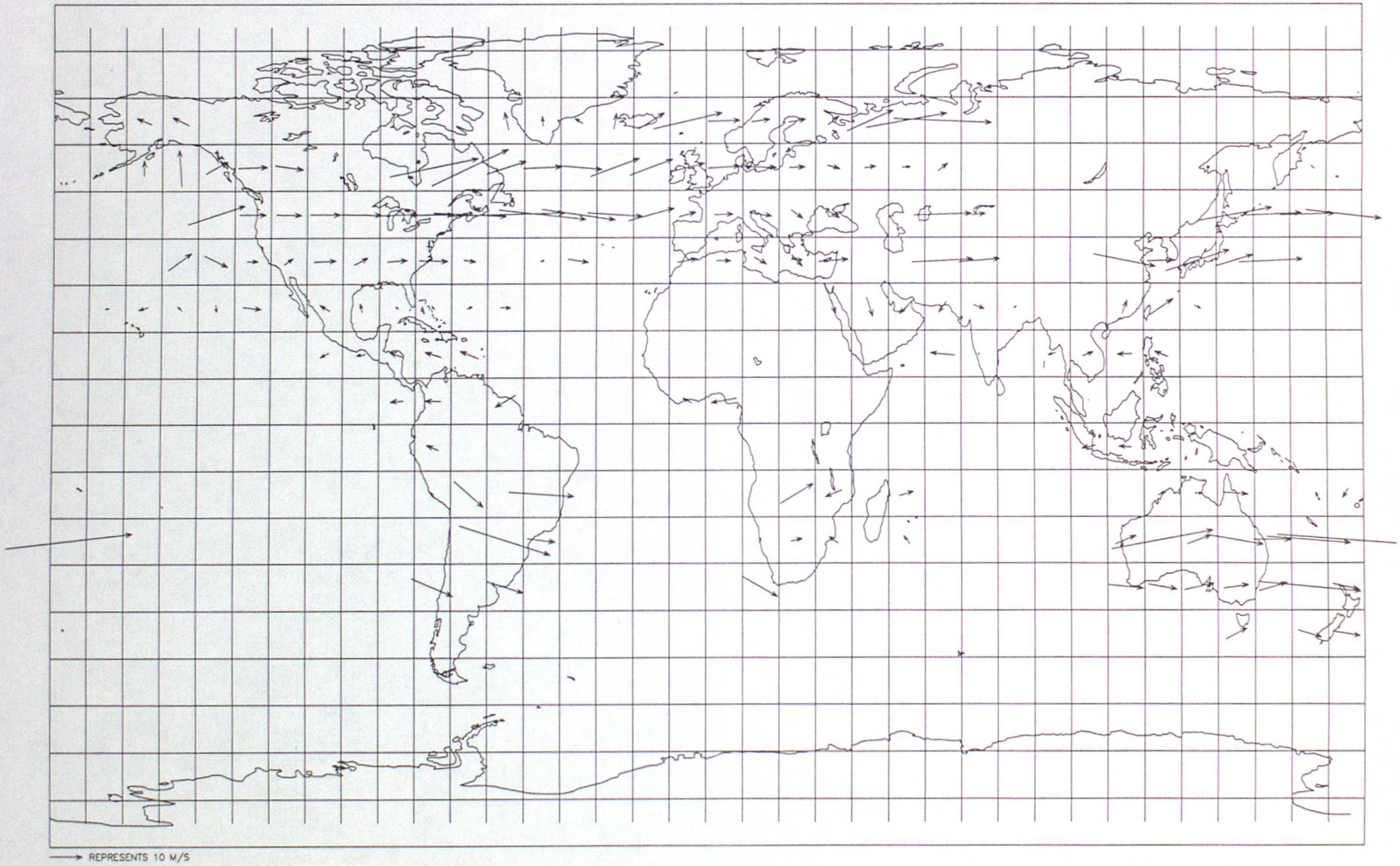
0 0 0 0 0 48 1 0 0 0 0 0 1 0 0 0 10 17 0 0 0
0 0 0 2 11 10 1 1 1 0 0 0 1 7 5 0 1 11 87 99 0 0 4
2 0 0 0 0 2 43 0 11 42 6 0 41 0 26 1 62 23 497 14 4
1 0 8 1 46 0 0 17 0 0 0 0 0 174 32 169 816 1030 16 173
0 0 0 0 54 0 7 232
0 0 0

AIRCRAFT MEAN WINDS BETWEEN 300 AND 150 HPA FIGURE 4A
JUNE 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT MEAN WINDS BETWEEN 1000 AND 301 HPA
JUNE 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4B



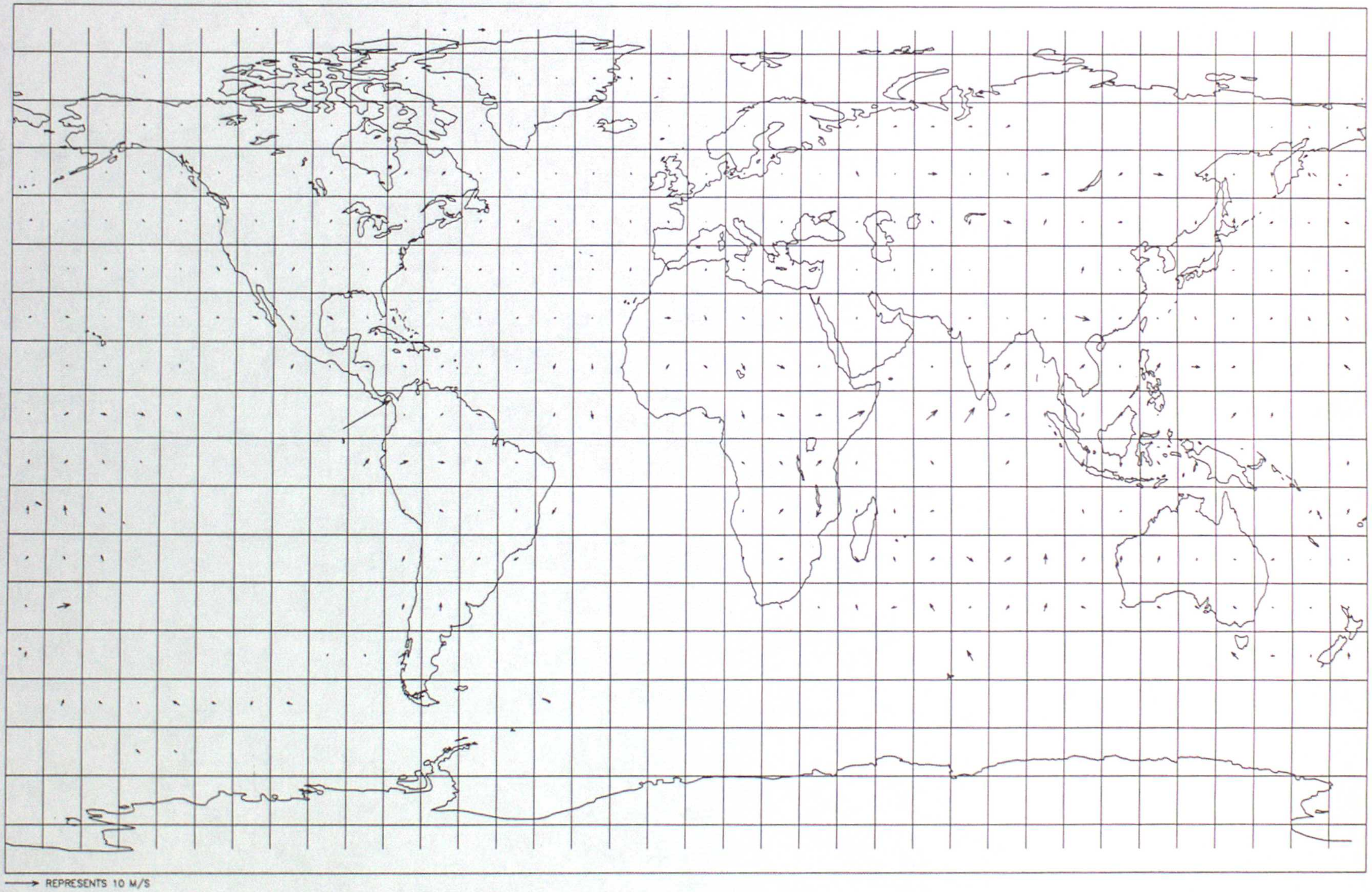
AIRCRAFT MEAN O-B WINDS BETWEEN 300 AND 150 HPA

FIGURE 5A

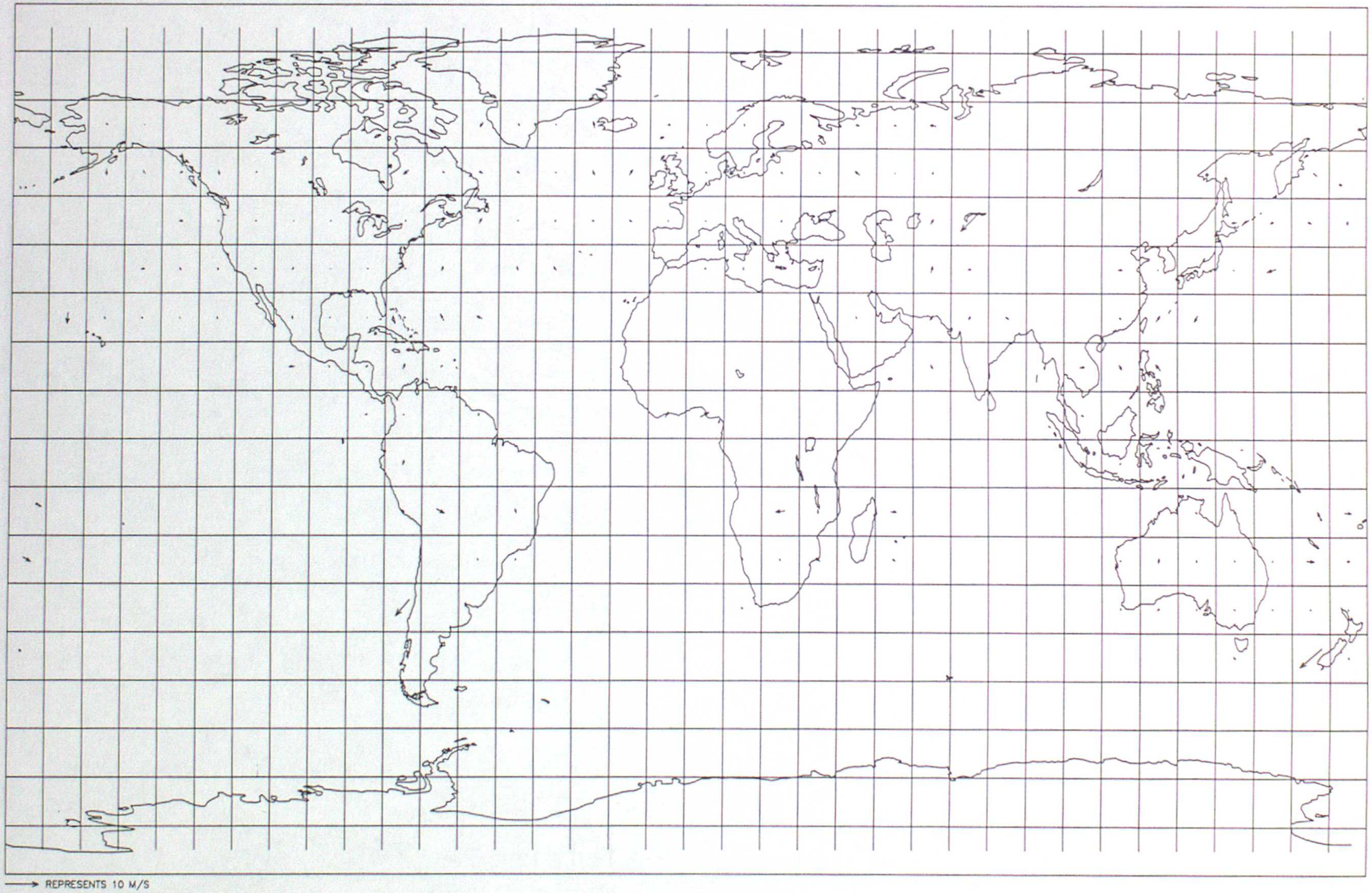
JUNE 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT MEAN O–B WINDS BETWEEN 1000 AND 301 HPA FIGURE 5B
JUNE 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



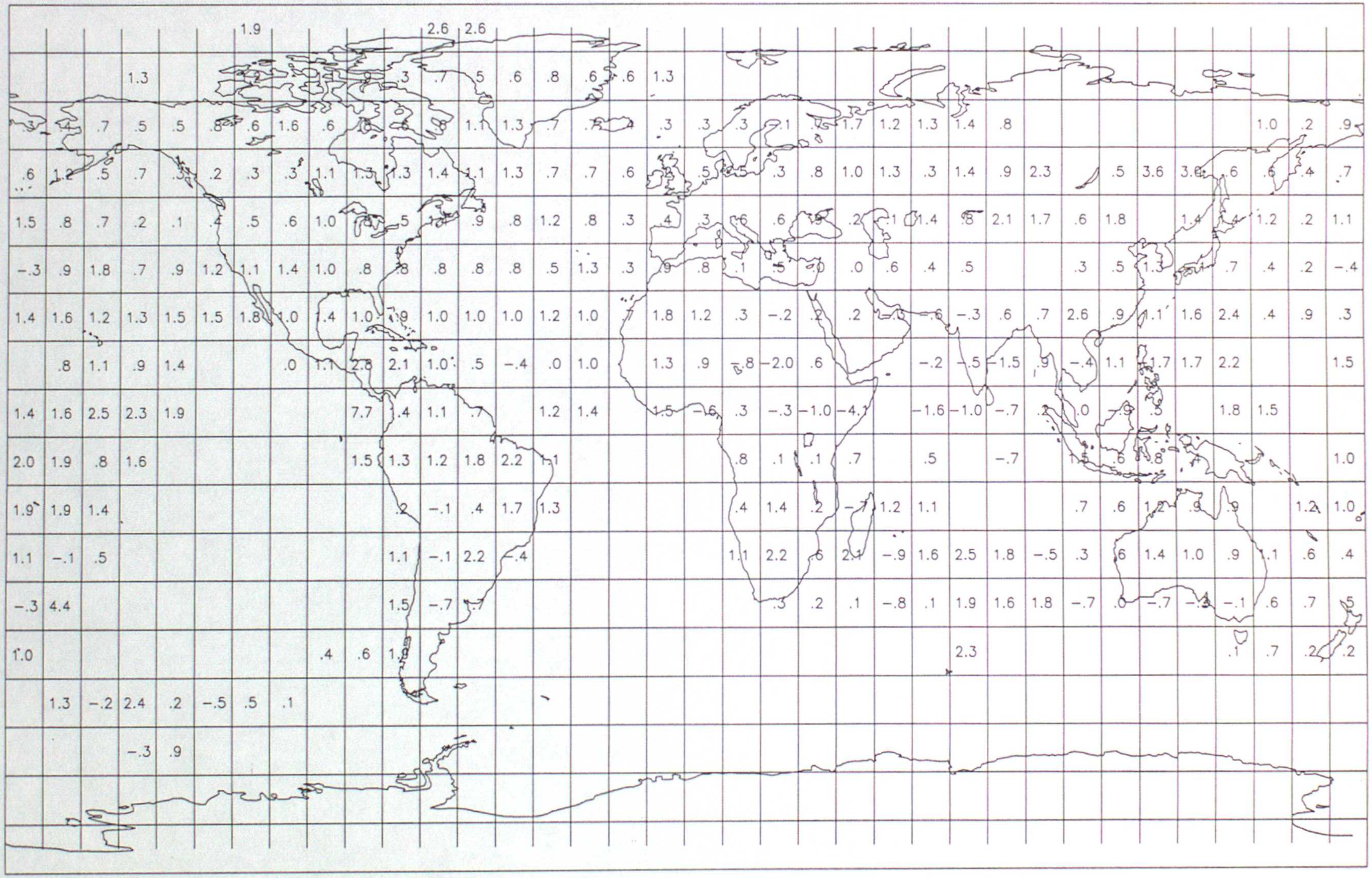
AIRCRAFT : MEAN O–B SPEEDS (M/S) 300 – 150 HPA

FIGURE 6A

JUNE 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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1.3 .3 .7 .5 .6 .8 .6 .6 1.3
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.6 1.2 .5 .7 .3 .2 .3 .3 1.1 1.3 1.3 1.4 1.1 1.3 .7 .7 .6 .5 .5 .3 .8 1.0 1.3 .3 1.4 .9 2.3 .5 3.6 3.6 .6 .6 .4 .7
1.5 .8 .7 .2 .1 .4 .5 .6 1.0 .8 .5 1.3 .9 .8 1.2 .8 .3 .4 .3 .6 .6 .5 .2 .1 1.4 .8 2.1 1.7 .6 1.8 1.4 .4 1.2 .2 1.1
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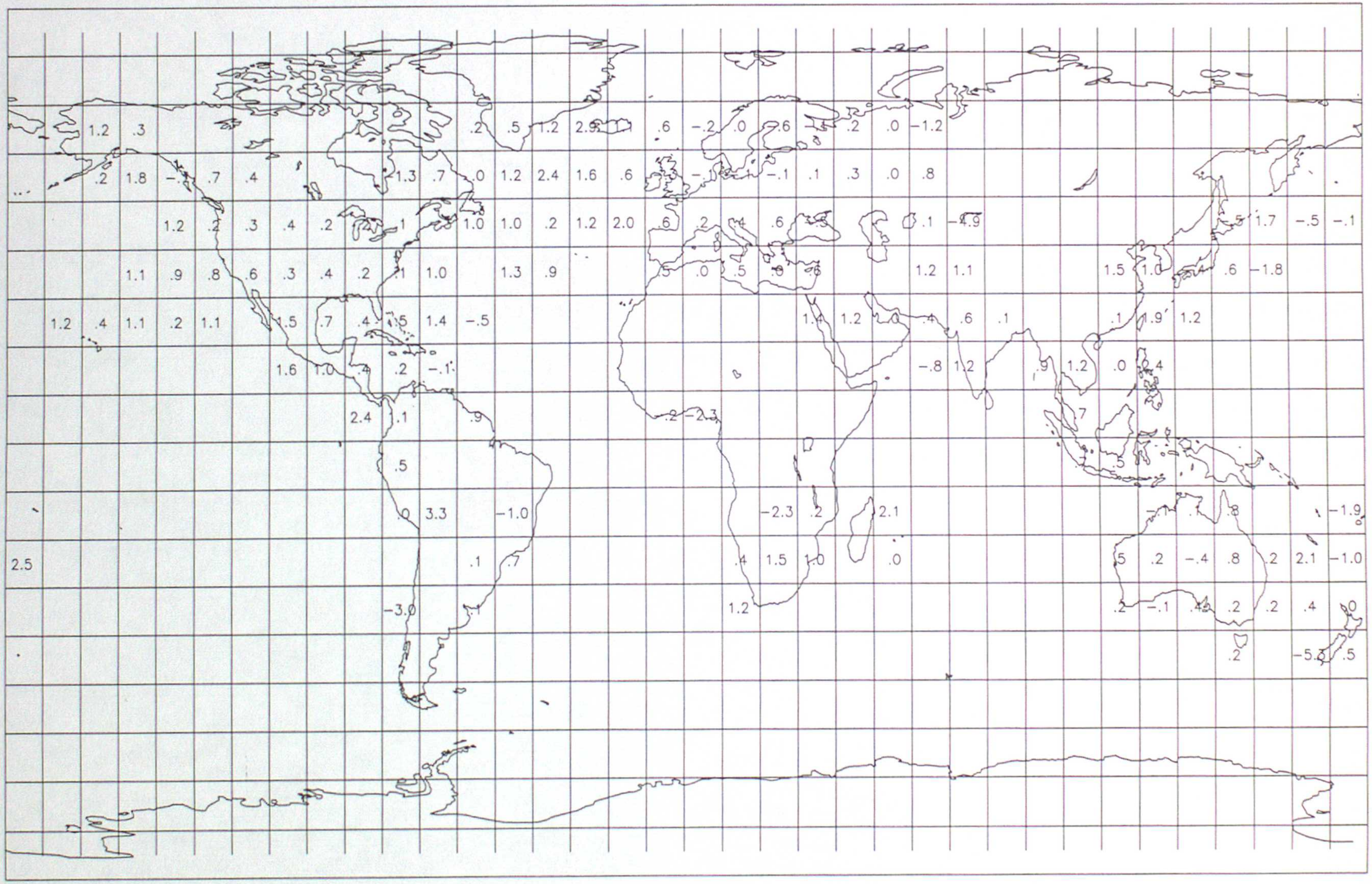
1.4 1.6 1.2 1.3 1.5 1.5 1.8 1.0 1.4 1.0 .9 1.0 1.0 1.0 1.2 1.0 .7 1.8 1.2 .3 –.2 .2 .2 .6 –.6 –.3 .6 .7 2.6 .9 1.1 1.6 2.4 .4 .9 .3
.8 1.1 .9 1.4 .0 1.1 2.8 2.1 1.0 .5 –.4 .0 1.0 1.3 .9 .8 –2.0 .6 –.2 –.5 –1.5 .9 –.4 1.1 1.7 1.7 2.2 1.5
1.4 1.6 2.5 2.3 1.9 7.7 1.4 1.1 .7 1.2 1.4 1.5 –.6 .3 –.3 –1.0 –4.1 –1.6 –1.0 –.7 .2 .0 –.9 .5 1.8 1.5
2.0 1.9 .8 1.6 1.5 1.3 1.2 1.8 2.2 1.1 .8 .1 .1 .7 .5 –.7 1.5 .6 .8 1.0
1.9 1.9 1.4 .2 –.1 .4 1.7 1.3 .4 1.4 .2 –.7 1.2 1.1 .7 .6 1.2 .9 .9 1.2 1.0
1.1 –.1 .5 1.1 –.1 2.2 .4 1.1 2.2 .6 2.4 –.9 1.6 2.5 1.8 –.5 .3 .6 1.4 1.0 .9 1.1 .6 .4
–.3 4.4 1.5 –.7 .7 .3 .2 .1 –.8 .1 1.9 1.6 1.8 –.7 .0 –.7 –.3 –.1 .6 .7 .5
1.0 .4 .6 1.9 2.3 .1 .7 .2 .2
1.3 –.2 2.4 .2 –.5 .5 .1
–.3 .9

AIRCRAFT : MEAN O-B SPEEDS (M/S) 1000 - 301 HPA
JUNE 2000
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6B


1.2 .3 .2 .5 1.2 2.5 .6 -.2 .0 .6 .2 .0 -1.2
.2 1.8 .7 .4 1.3 .7 .0 1.2 2.4 1.6 .6 -.1 -.1 .1 .3 .0 .8
1.2 .2 .3 .4 .2 .1 1.0 1.0 .2 1.2 2.0 .6 .2 .4 .6 .1 -4.9 .5 1.7 -.5 -.1
1.1 .9 .8 .6 .3 .4 .2 .1 1.0 1.3 .9 .5 .0 .5 .6 1.2 1.1 1.5 1.0 .4 .6 -1.8
1.2 .4 1.1 .2 1.1 1.5 .7 .4 .5 1.4 -.5 1.4 1.2 .0 .4 .6 .1 .1 1.9 1.2
1.6 1.0 .4 .2 -.1 -.8 1.2 .9 1.2 .0 .4
2.4 1.1 .9 .2 -2.3 .7
.5 .5
.0 3.3 -1.0 -2.3 .2 2.1 .8 -1.9
2.5 .1 .7 .4 1.5 1.0 .0 .5 .2 -.4 .8 .2 2.1 -1.0
-3.0 .1 1.2 .2 -.1 .4 .2 .2 .4 .0
.2 -5.3 .5

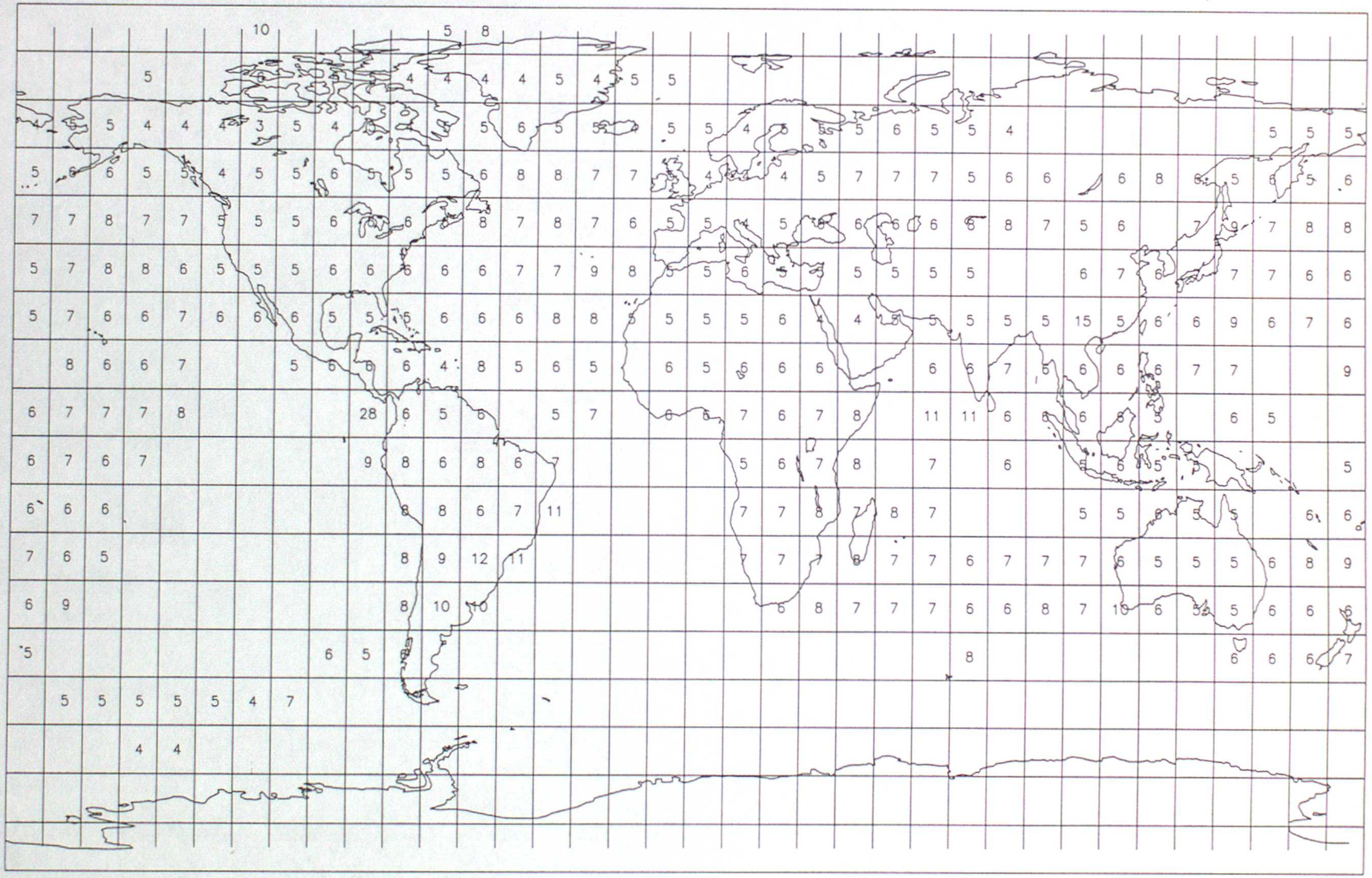
AIRCRAFT : RMS O−B VECTOR (M/S) 300 − 150 HPA

JUNE 2000

OBSERVATIONS WITH O−B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 7A


10 5 8
5 6 5 4 4 4 4 5 4 5 5
4 5 5 4 4 4 3 5 4 5 5 5 6 5 5 4 5 5 4 5 5 5 6 5 5 4 5 5 5
5 6 6 5 5 4 5 5 6 5 5 5 6 8 8 7 7 5 4 4 4 5 7 7 7 5 6 6 6 8 6 5 6 5 6
7 7 8 7 7 5 5 5 6 6 6 8 7 8 7 6 5 5 4 5 6 6 6 6 6 8 7 5 6 7 9 7 8 8
5 7 8 8 6 5 5 5 6 6 6 6 6 7 7 9 8 5 5 6 5 5 5 5 5 5 6 7 6 7 7 6 6
5 7 6 6 7 6 6 6 5 5 5 6 6 6 8 8 5 5 5 5 6 4 4 5 5 5 5 5 15 5 6 6 9 6 7 6
8 6 6 7 5 6 6 6 4 8 5 6 5 6 5 6 6 6 6 6 7 6 6 6 6 7 7 9
6 7 7 7 8 28 6 5 6 5 7 6 6 7 6 7 8 11 11 6 6 6 6 5 6 5
6 7 6 7 9 8 6 8 6 7 5 6 7 8 7 6 5 6 5 5 5
6 6 6 8 8 6 7 11 7 7 8 7 8 7 5 5 6 5 5 6 6
7 6 5 8 9 12 11 7 7 7 8 7 7 6 7 7 7 6 5 5 5 6 8 9
6 9 8 10 10 6 8 7 7 7 6 6 8 7 10 6 5 5 6 6 6
5 6 5 6 8 6 6 6 7
5 5 5 5 5 4 7
4 4

AIRCRAFT : RMS O–B VECTOR (M/S) 1000 – 301 HPA

FIGURE 7B

JUNE 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

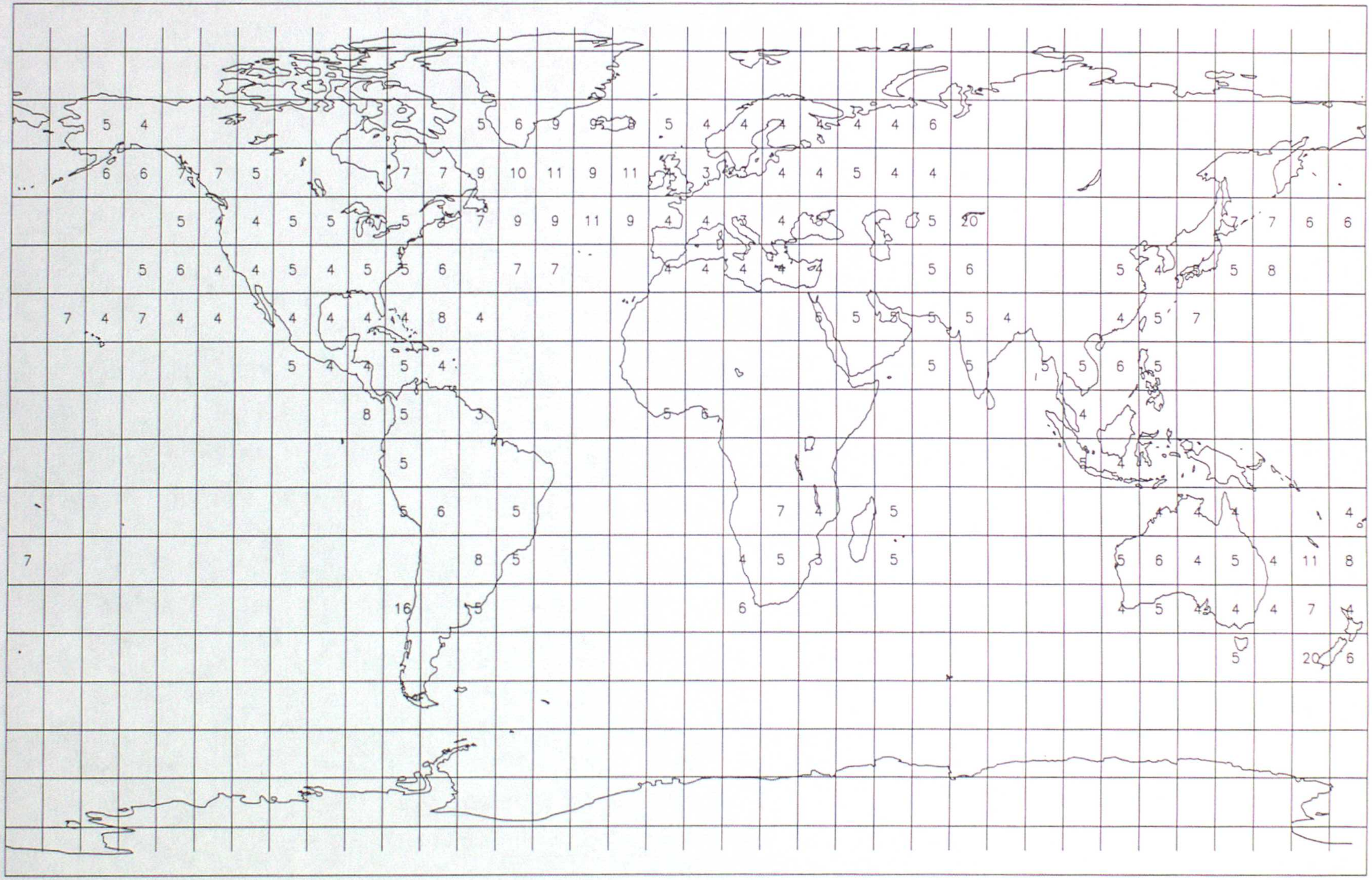

5 4 5 6 9 9 8 5 4 4 4 4 4 4 6
6 6 7 7 5 7 7 9 10 11 9 11 3 4 4 5 4 4
5 4 4 5 5 5 7 9 9 11 9 4 4 3 4 5 20 7 7 6 6
5 6 4 4 5 4 5 5 6 7 7 4 4 4 4 4 5 6 5 4 4 5 8
7 4 7 4 4 4 4 4 4 8 4 5 5 5 5 5 4 4 5 7
5 4 4 5 4 5 5 5 5 6 5
8 5 3 5 6 4
5 4
5 6 5 7 4 5 4 4 4 4
7 8 5 4 5 3 5 5 6 4 5 4 11 8
16 5 6 4 5 4 4 4 7 4
5 20 6

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
42027	00	Z	100	34/ 75	19	1	124.1	49.2	133.4	5
42027	12	Z	1000	34/ 75	23	0	29.0	-39.2	48.8	6
42314	00	Z	150	27/ 95	21	0	91.2	81.3	122.2	4
42339	00	Z	150	26/ 73	20	0	90.9	-52.1	104.8	5
42339	12	Z	100	26/ 73	15	0	111.7	103.1	152.0	7
42369	12	Z	150	27/ 81	14	0	73.4	77.2	106.5	5
42397	12	Z	300	27/ 88	10	0	43.4	-84.0	94.5	4
42647	12	Z	100	23/ 73	11	1	78.1	151.5	170.5	6
42667	12	Z	100	23/ 77	13	1	88.2	109.2	140.4	4
42701	12	Z	100	23/ 85	16	1	118.4	11.3	118.9	4
42867	12	Z	100	21/ 79	15	1	82.1	112.7	139.4	4
43003	00	Z	100	19/ 73	9	4	103.7	211.2	235.3	5
43003	12	Z	100	19/ 73	3	14	23.7	270.3	271.4	7
43185	12	Z	100	16/ 81	18	1	112.5	99.7	150.3	6
43295	12	Z	250	13/ 78	20	0	77.4	-43.6	88.8	6
53463	00	Z	150	41/ 112	25	0	107.0	43.2	115.3	5
53845	00	Z	1000	37/ 109	29	0	7.7	37.6	38.4	4
57127	00	Z	100	33/ 107	30	0	40.0	115.3	122.0	4
84628	12	Z	850	-12/ -77	23	1	7.6	-73.9	74.3	8
91366	00	Z	100	9/ 168	27	0	57.0	160.6	170.4	5
96935	00	Z	300	-7/ 113	5	0	92.8	68.4	115.3	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – JUNE 2000 FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1150

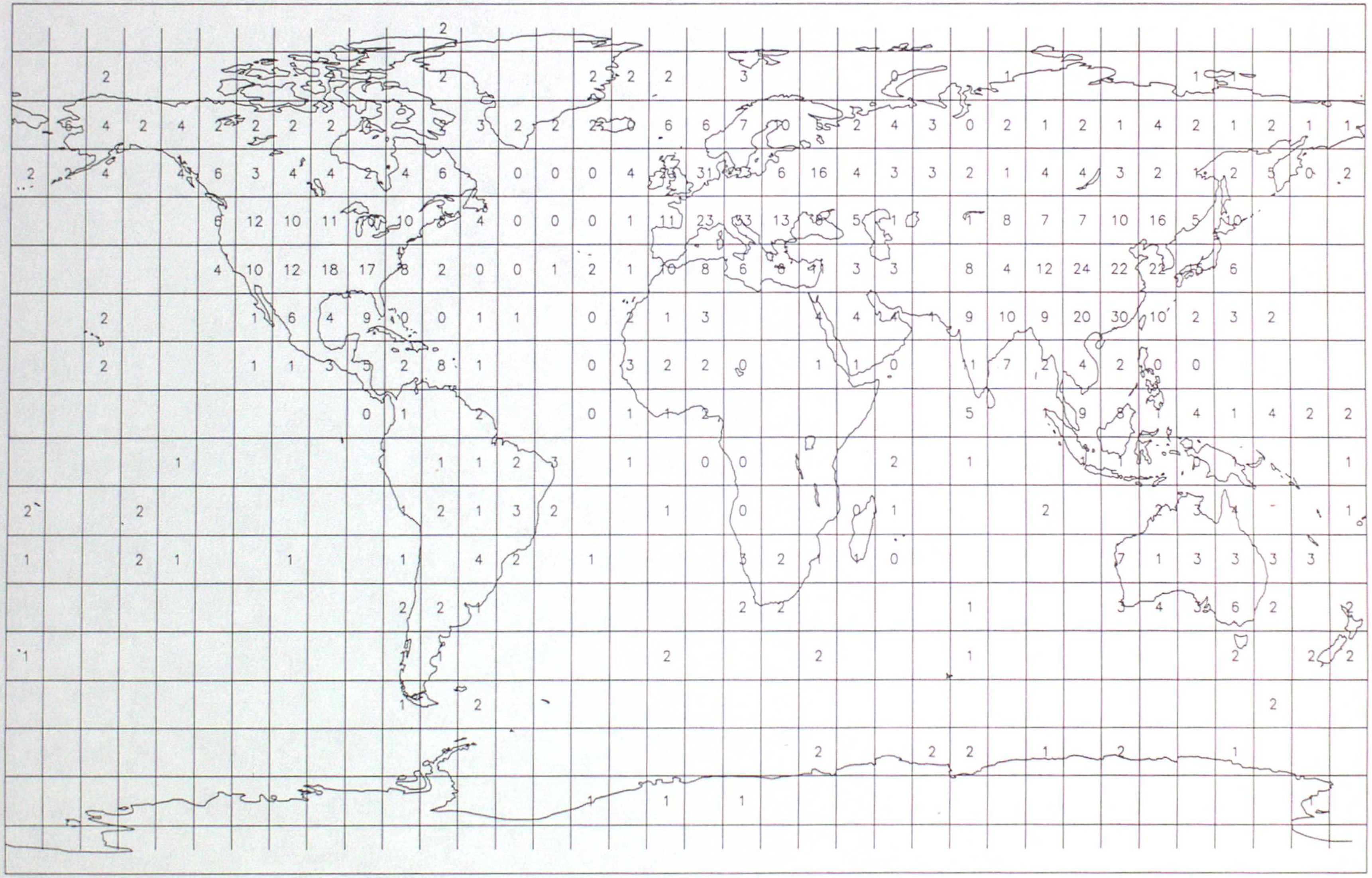

2
2 2 2 2 2 3 1 1 1
6 4 2 4 2 2 2 2 3 2 2 2 23 0 6 6 7 10 55 2 4 3 0 2 1 2 1 4 2 1 2 1 1
2 2 4 4 6 3 4 4 2 4 6 0 0 0 4 23 31 23 6 16 4 3 3 2 1 4 4 3 2 1 2 5 0 2
6 12 10 11 10 10 4 0 0 0 1 11 23 33 13 8 5 1 1 8 7 7 10 16 5 10
4 10 12 18 17 8 2 0 0 1 2 1 10 8 6 8 11 3 3 8 4 12 24 22 22 6
2 1 6 4 9 0 0 1 1 0 2 1 3 4 4 4 1 9 10 9 20 30 10 2 3 2
2 1 1 3 5 2 8 1 0 3 2 2 0 1 1 0 11 7 2 4 2 0 0
0 1 2 0 1 1 2 5 9 8 1 4 1 4 2 2
1 1 1 2 3 1 0 0 2 1 1
2 2 1 2 1 3 2 1 0 0 1 2 2 3 4 1
1 2 1 1 1 4 2 1 3 2 1 1 0 7 1 3 3 3 3
2 2 1 2 2 1 3 4 3 6 2 2
1 1 2 2 1 2 2 2
1 2 2
2 2 2 1 2 1
1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
41530	12	V	150	34/ 72	12	0	41	-13.9	-7.0	39.3	1
43369	00	V	100	8/ 73	17	0	5	0.1	0.8	17.7	1
43369	12	V	100	8/ 73	12	1	16	-8.8	1.3	24.9	1
68588	12	V	100	-30/ 31	22	0	0	-18.6	-0.9	21.1	1
68842	12	V	100	-34/ 26	13	0	38	-15.2	-0.5	19.5	1
83612	12	V	200	-20/ -55	21	0	19	3.4	-5.5	19.6	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – JUNE 2000

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1340

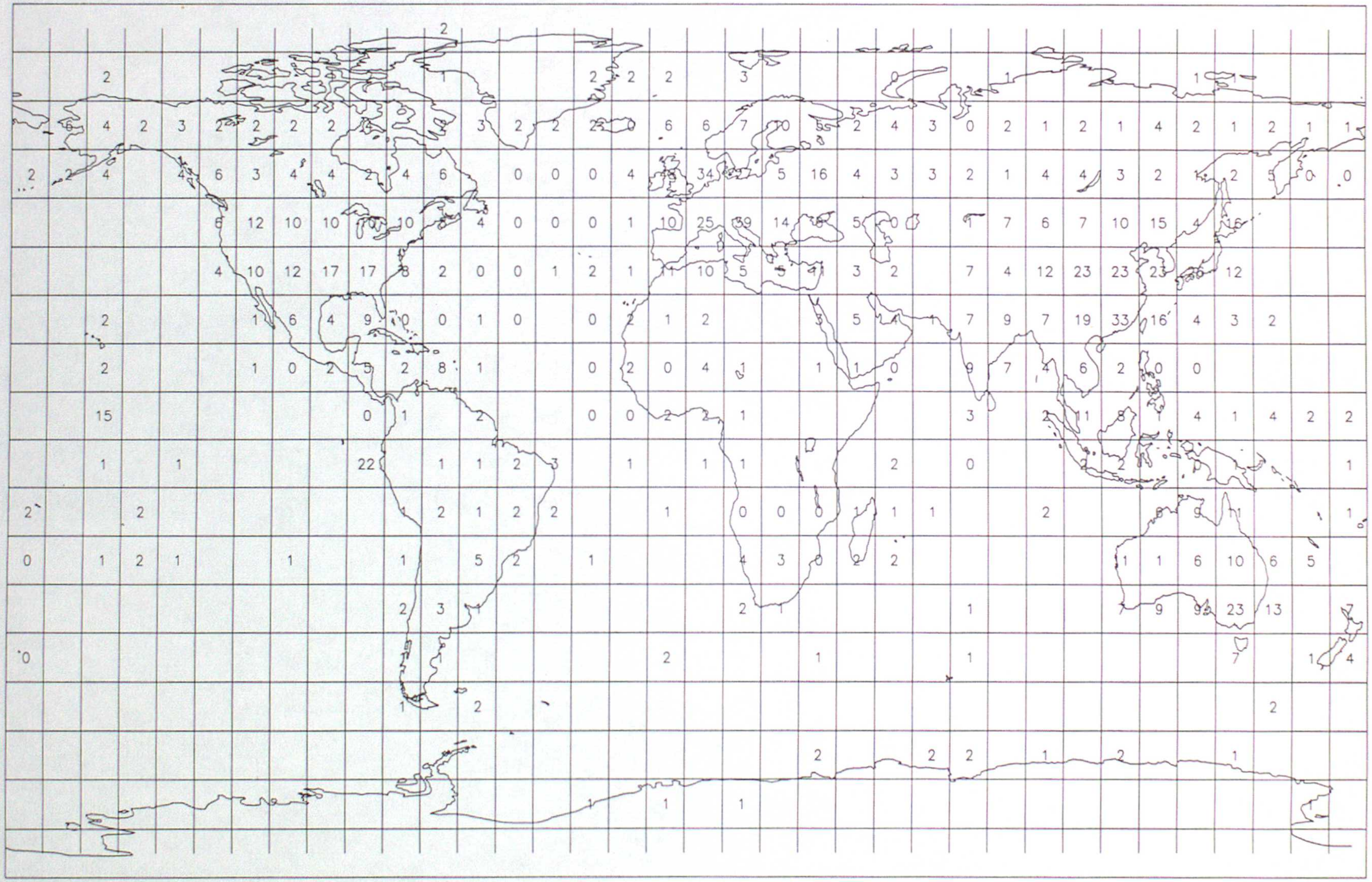

2
2 1 2 2 2 3 0 1 1 1
6 4 2 3 2 2 2 2 2 3 2 2 2 0 6 6 7 0 5 2 4 3 0 2 1 2 1 4 2 1 2 1 1
2 2 4 4 6 3 4 4 2 4 6 0 0 0 4 34 5 16 4 3 3 2 1 4 4 3 2 1 2 5 0 0
6 12 10 10 10 10 4 0 0 0 1 10 25 39 14 5 0 1 7 6 7 10 15 4 16
4 10 12 17 17 8 2 0 0 1 2 1 1 10 5 5 1 3 2 7 4 12 23 23 23 12
2 1 6 4 9 0 0 1 0 0 2 1 2 3 5 4 1 7 9 7 19 33 16 4 3 2
2 1 0 2 5 2 8 1 0 2 0 4 1 1 1 0 9 7 4 6 2 0 0
15 0 1 2 0 0 2 2 1 3 2 11 8 4 1 4 2 2
1 1 22 1 1 2 3 1 1 1 2 0 2 2 1
2 2 2 1 2 2 1 0 0 0 1 1 1 2 8 9 1 1
0 1 2 1 1 1 5 2 1 4 3 0 2 2 1 1 6 10 6 5
2 3 1 2 1 1 7 9 9 23 13 7
0 1 2 1 1 7 1 4
1 2 2
2 2 2 1 2 1
1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS $\geq 10°$, with
SD $< 30°$, and
MAX SPREAD $< 10°$

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
17240	00	DD	38/ 31	21	-11.5	3.3	8.4
24908	12	DD	60/ 102	23	10.4	3.2	12.3
40375	00	DD	28/ 37	18	-10.4	6.9	26.1
43041	00	DD	19/ 82	11	11.6	6.0	13.9
47981	00	DD	25/ 141	6	10.7	8.6	24.9
59280	00	DD	24/ 113	20	10.9	7.9	17.2
62337	12	DD	31/ 34	26	-23.8	6.3	26.0
72293	00	DD	33/-117	24	10.1	2.3	10.8
78384	12	DD	19/ -81	19	-10.1	8.0	19.2

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

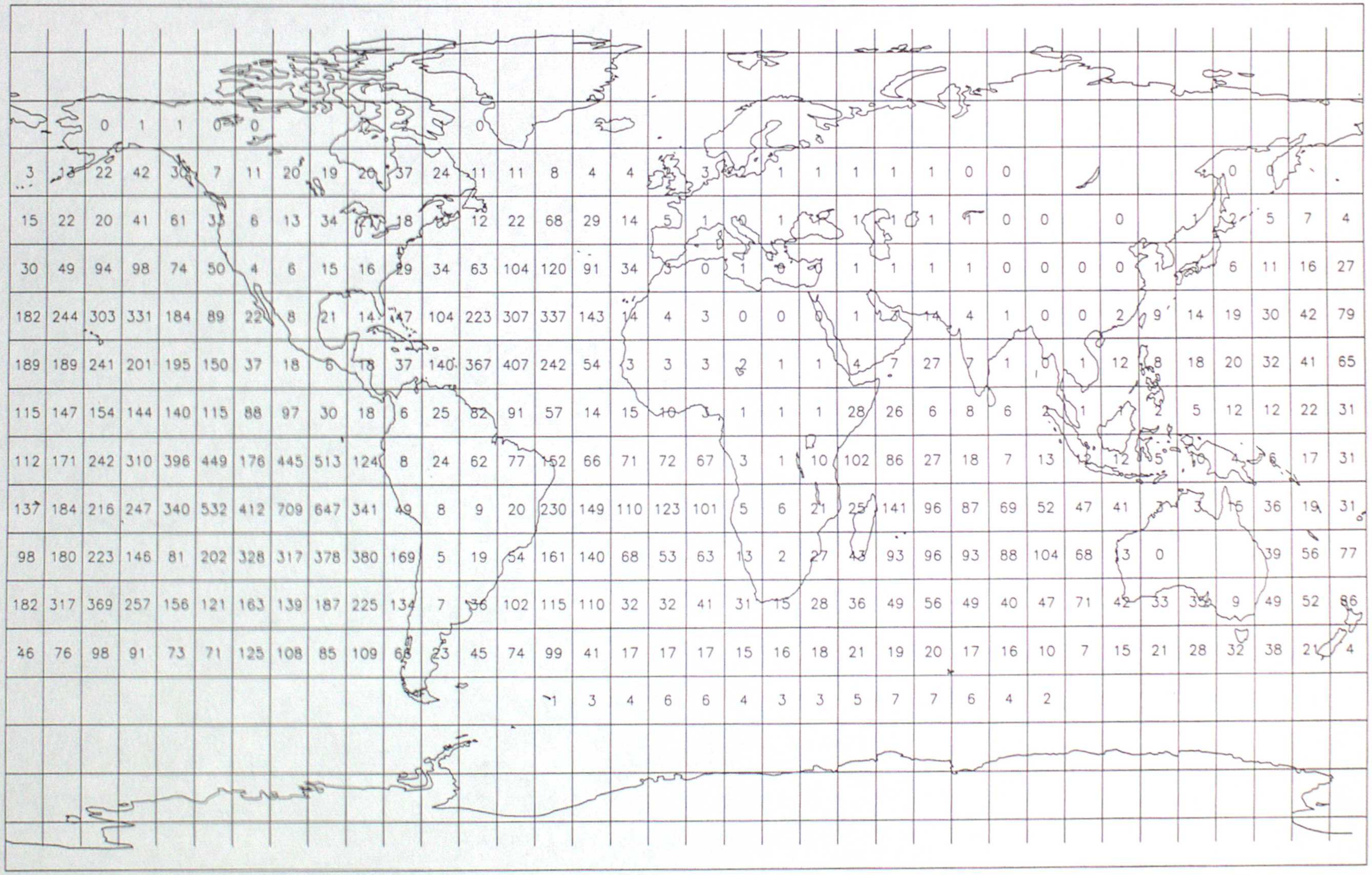
MONTH: JUNE 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

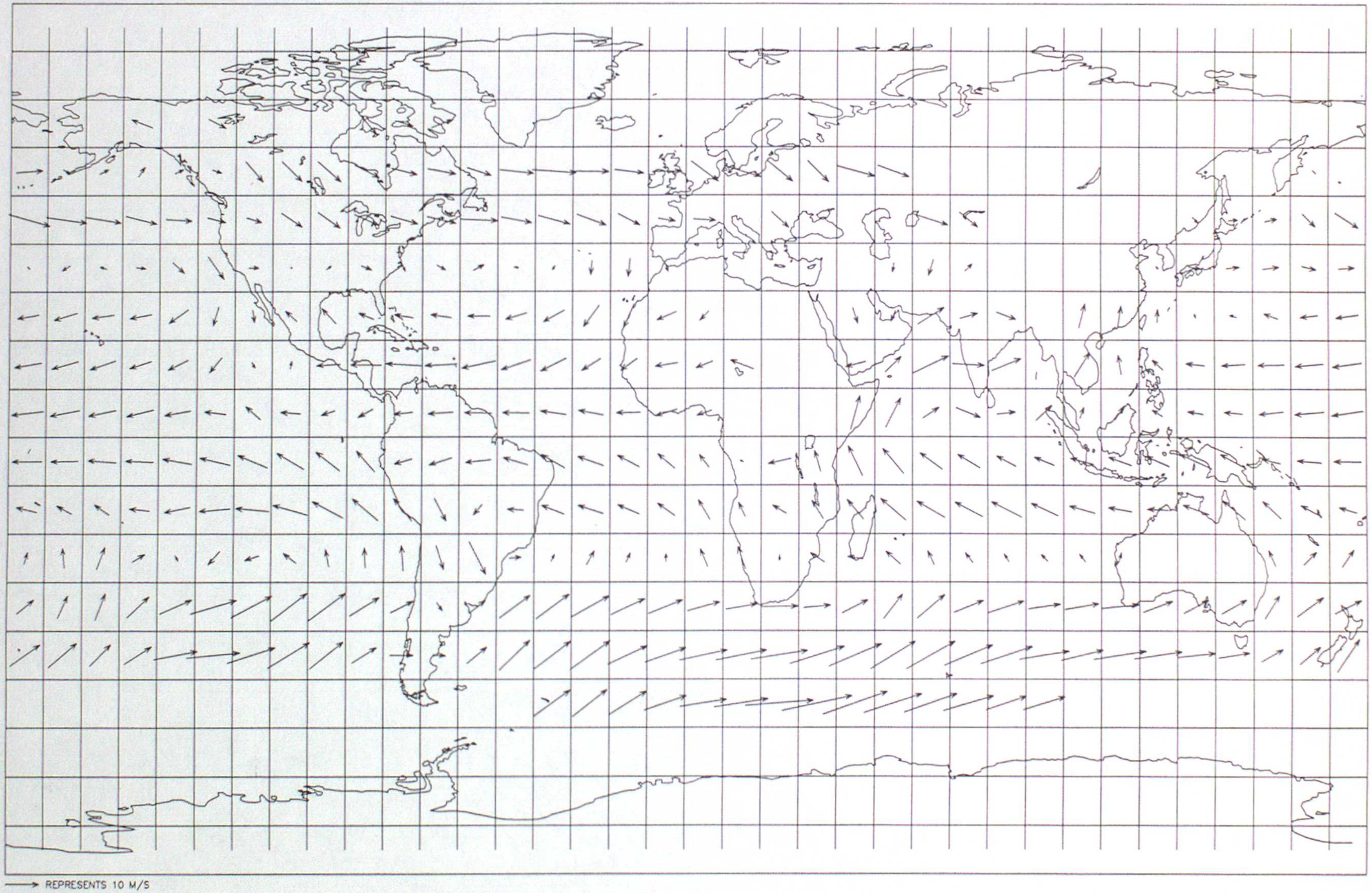
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
JUNE 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 26971



		0	1	1	0	0						0																							
3	13	22	42	30	7	11	20	19	20	37	24	11	11	8	4	4		3	2	1	1	1	1	1	0	0						0	0		
15	22	20	41	61	33	6	13	34	21	18	10	12	22	68	29	14	5	1	0	1	1	1	1	1	1	0	0		0		1	2	5	7	4
30	49	94	98	74	50	4	6	15	16	29	34	63	104	120	91	34	3	0	1	0	0	1	1	1	1	0	0	0	0	1		6	11	16	27
182	244	303	331	184	89	22	8	21	14	47	104	223	307	337	143	14	4	3	0	0	0	1	3	14	4	1	0	0	2	9	14	19	30	42	79
189	189	241	201	195	150	37	18	6	18	37	140	367	407	242	54	3	3	3	2	1	1	4	7	27	7	1	0	1	12	8	18	20	32	41	65
115	147	154	144	140	115	88	97	30	18	6	25	82	91	57	14	15	10	3	1	1	1	28	26	6	8	6	2	1	1	2	5	12	12	22	31
112	171	242	310	396	449	176	445	513	124	8	24	62	77	152	66	71	72	67	3	1	10	102	86	27	18	7	13	12	12	5	10	4	6	17	31
137	184	216	247	340	532	412	709	647	341	49	8	9	20	230	149	110	123	101	5	6	21	25	141	96	87	69	52	47	41	3	3	15	36	19	31
98	180	223	146	81	202	328	317	378	380	169	5	19	54	161	140	68	53	63	13	2	27	43	93	96	93	88	104	68	13	0			39	56	77
182	317	369	257	156	121	163	139	187	225	134	7	36	102	115	110	32	32	41	31	15	28	36	49	56	49	40	47	71	42	33	35	9	49	52	86
46	76	98	91	73	71	125	108	85	109	68	23	45	74	99	41	17	17	17	15	16	18	21	19	20	17	16	10	7	15	21	28	32	38	21	4
														1	3	4	6	6	4	3	3	5	7	7	6	4	2								

SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 701–1000 HPA FIGURE 11
JUNE 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

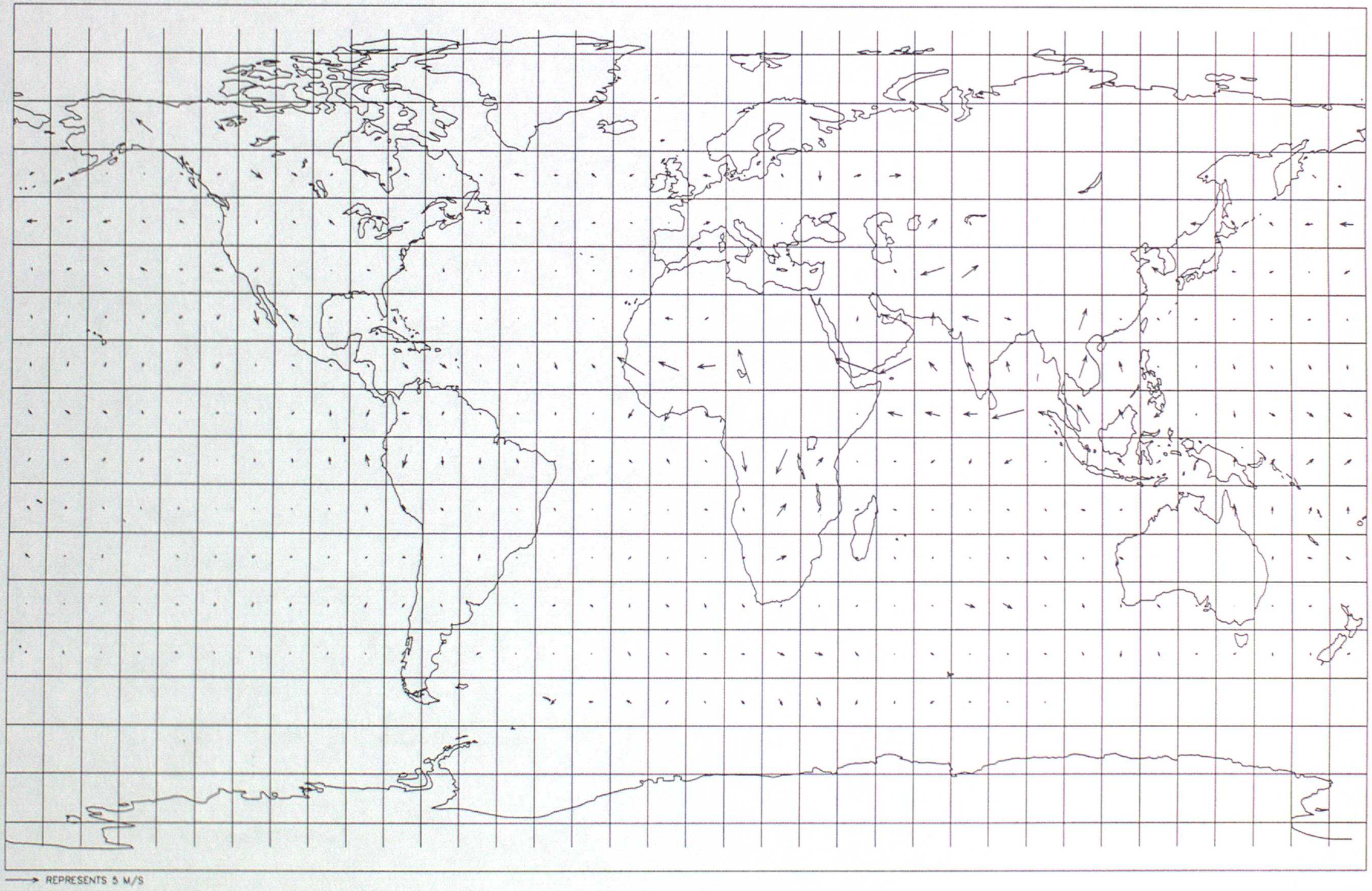
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

JUNE 2000

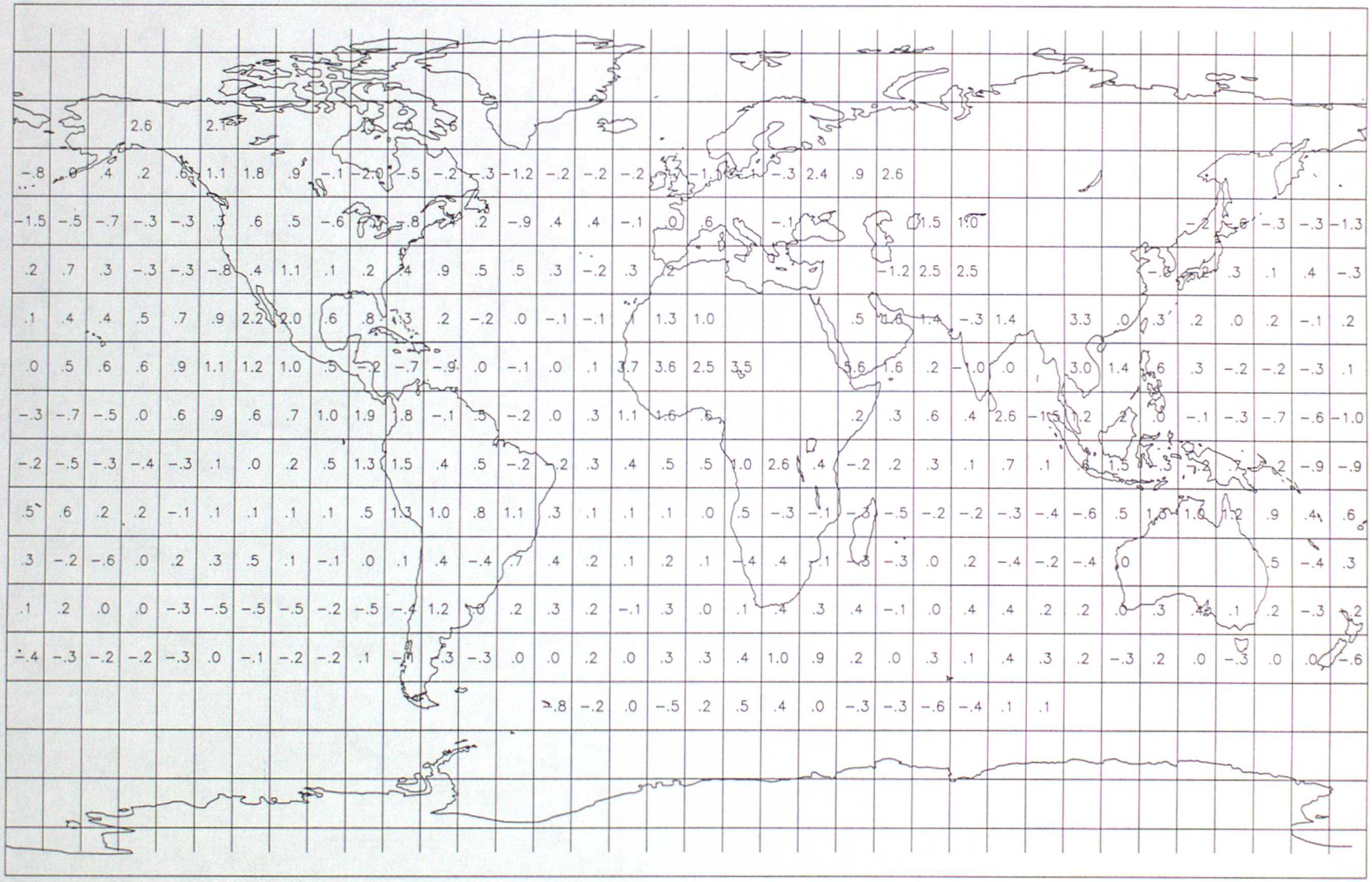
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

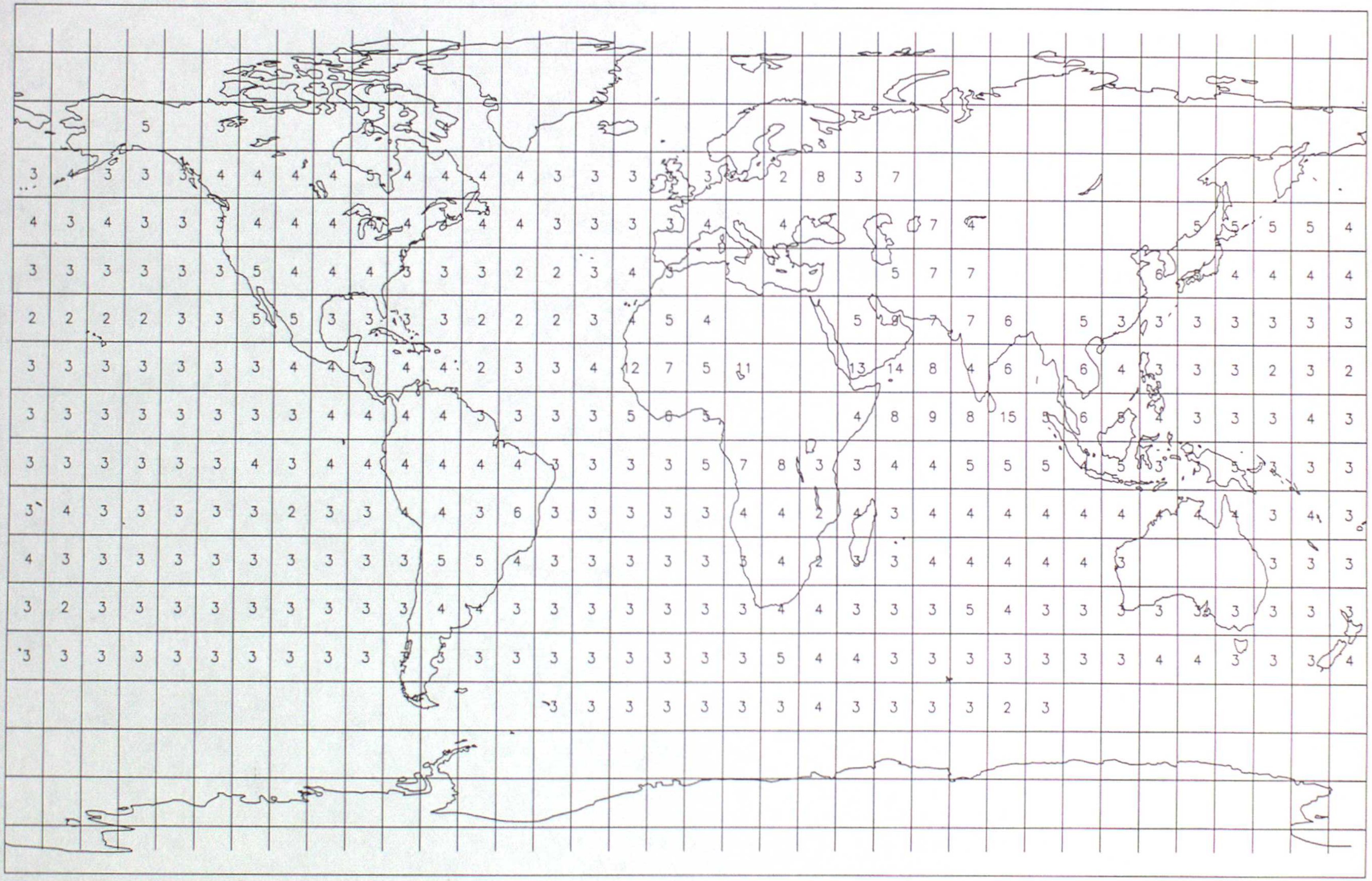
FIGURE 12


→ REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
JUNE 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

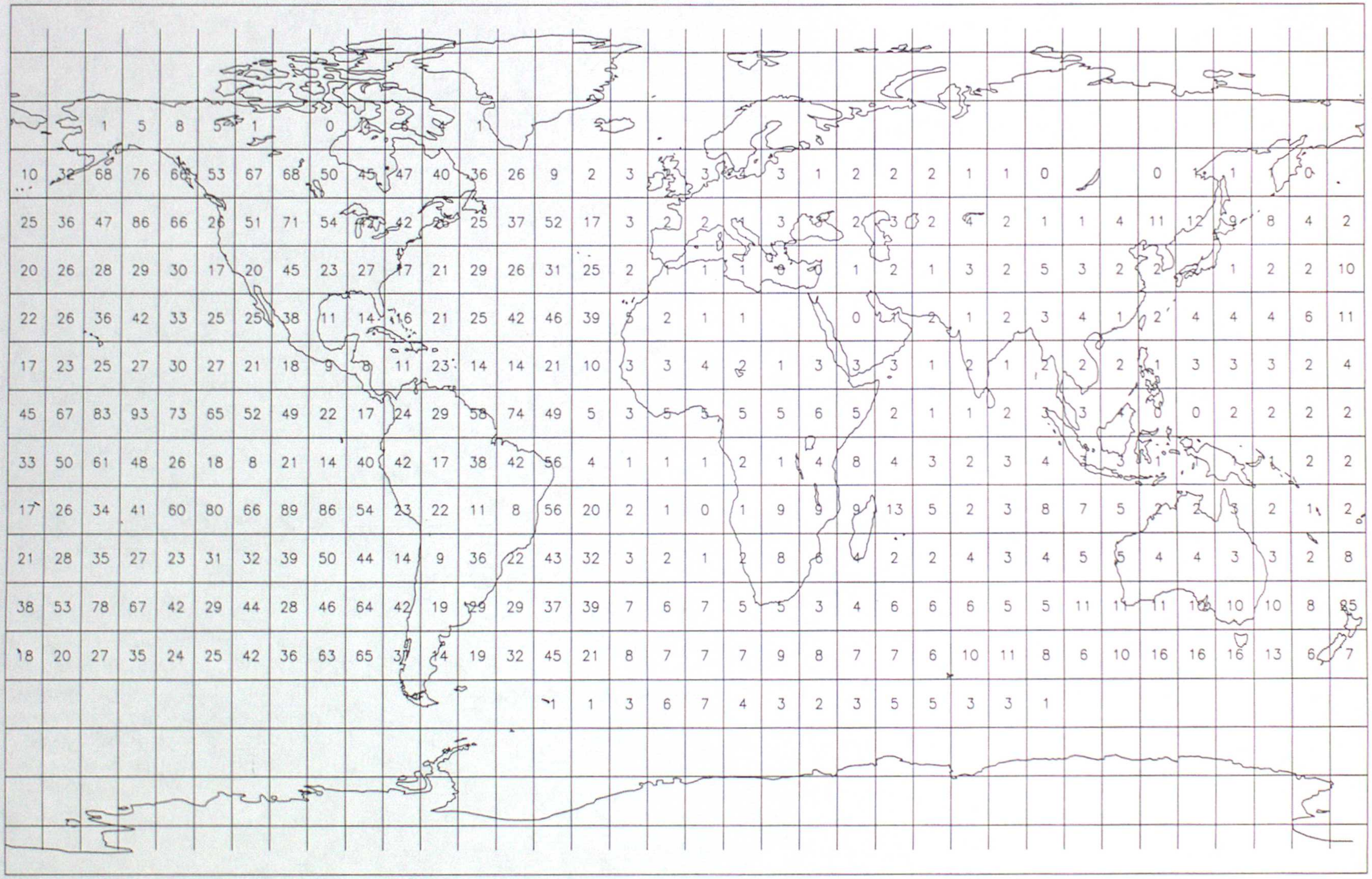

2.6 2.1 .6
-.8 .0 .4 .2 .6 1.1 1.8 .9 -.1 -2.0 -.5 -.2 -.3 -1.2 -.2 -.2 -.2 -1.1 -.3 2.4 .9 2.6
-1.5 -.5 -.7 -.3 -.3 .3 .6 .5 -.6 -.8 .2 -.9 .4 .4 -.1 .0 .6 -.1 1.5 1.0 -.2 -.6 -.3 -.3 -1.3
.2 .7 .3 -.3 -.3 -.8 .4 1.1 .1 .2 .4 .9 .5 .5 .3 -.2 .3 .2 -1.2 2.5 2.5 .2 .3 .1 .4 -.3
.1 .4 .4 .5 .7 .9 2.2 2.0 .6 .8 .3 .2 -.2 .0 -.1 -.1 .1 1.3 1.0 .5 1.6 1.4 -.3 1.4 3.3 .0 .3 .2 .0 .2 -.1 .2
.0 .5 .6 .6 .9 1.1 1.2 1.0 .5 -.2 -.7 -.9 .0 -.1 .0 .1 3.7 3.6 2.5 3.5 5.6 1.6 .2 -1.0 .0 3.0 1.4 .6 .3 -.2 -.2 -.3 .1
-.3 -.7 -.5 .0 .6 .9 .6 .7 1.0 1.9 .8 -.1 .5 -.2 .0 .3 1.1 1.6 .6 .2 .3 .6 .4 2.6 -1.5 1.2 .2 .0 -.1 -.3 -.7 -.6 -1.0
-.2 -.5 -.3 -.4 -.3 .1 .0 .2 .5 1.3 1.5 .4 .5 -.2 .2 .3 .4 .5 .5 1.0 2.6 .4 -.2 .2 .3 .1 .7 .1 .6 1.5 .3 .2 .7 .2 -.9 -.9
.5 .6 .2 .2 -.1 .1 .1 .1 .1 .5 1.3 1.0 .8 1.1 .3 .1 .1 .1 .0 .5 -.3 -.1 -.3 -.5 -.2 -.2 -.3 -.4 -.6 .5 1.3 1.0 1.2 .9 .4 .6
.3 -.2 -.6 .0 .2 .3 .5 .1 -.1 .0 .1 .4 -.4 .7 .4 .2 .1 .2 .1 -.4 .4 -.1 -.3 -.3 .0 .2 -.4 -.2 -.4 .0 .5 -.4 .3
.1 .2 .0 .0 -.3 -.5 -.5 -.5 -.2 -.5 -.4 1.2 .0 .2 .3 .2 -.1 .3 .0 .1 .4 .3 .4 -.1 .0 .4 .4 .2 .2 .0 .3 .4 .1 .2 -.3 .2
-.4 -.3 -.2 -.2 -.3 .0 -.1 -.2 -.2 .1 -.1 .3 -.3 .0 .0 .2 .0 .3 .3 .4 1.0 .9 .2 .0 .3 .1 .4 .3 .2 -.3 .2 .0 -.3 .0 .0 -.6
-.8 -.2 .0 -.5 .2 .5 .4 .0 -.3 -.3 -.6 -.4 .1 .1

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
JUNE 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5 3
3 4 3 3 3 4 4 4 4 5 4 4 4 4 3 3 3 3 2 2 8 3 7
4 3 4 3 3 3 4 4 4 4 4 4 4 3 3 3 3 4 4 7 4 5 5 5 5 4
3 3 3 3 3 3 5 4 4 4 3 3 3 2 2 3 4 3 5 7 7 6 4 4 4 4
2 2 2 2 3 3 5 5 3 3 3 3 2 2 2 3 4 5 4 5 9 7 7 6 5 3 3 3 3 3 3 3
3 3 3 3 3 3 3 4 4 3 4 4 2 3 3 4 12 7 5 11 13 14 8 4 6 6 4 3 3 3 2 3 2
3 3 3 3 3 3 3 3 4 4 4 4 3 3 3 3 5 6 3 4 8 9 8 15 3 6 5 4 3 3 3 4 3
3 3 3 3 3 3 4 3 4 4 4 4 4 4 3 3 3 3 5 7 8 3 3 4 4 5 5 5 4 5 3 3 3 3 3 3
3 4 3 3 3 3 3 2 3 3 4 4 3 6 3 3 3 3 3 4 4 2 4 3 4 4 4 4 4 4 4 4 4 3 4 3
4 3 3 3 3 3 3 3 3 3 3 5 5 4 3 3 3 3 3 3 4 2 3 3 4 4 4 4 4 3 3 3 3
3 2 3 3 3 3 3 3 3 3 3 4 4 3 3 3 3 3 3 3 4 4 3 3 3 5 4 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 5 4 4 3 3 3 3 3 3 3 4 4 3 3 3 4
3 3 3 3 3 3 3 4 3 3 3 3 2 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
JUNE 2000

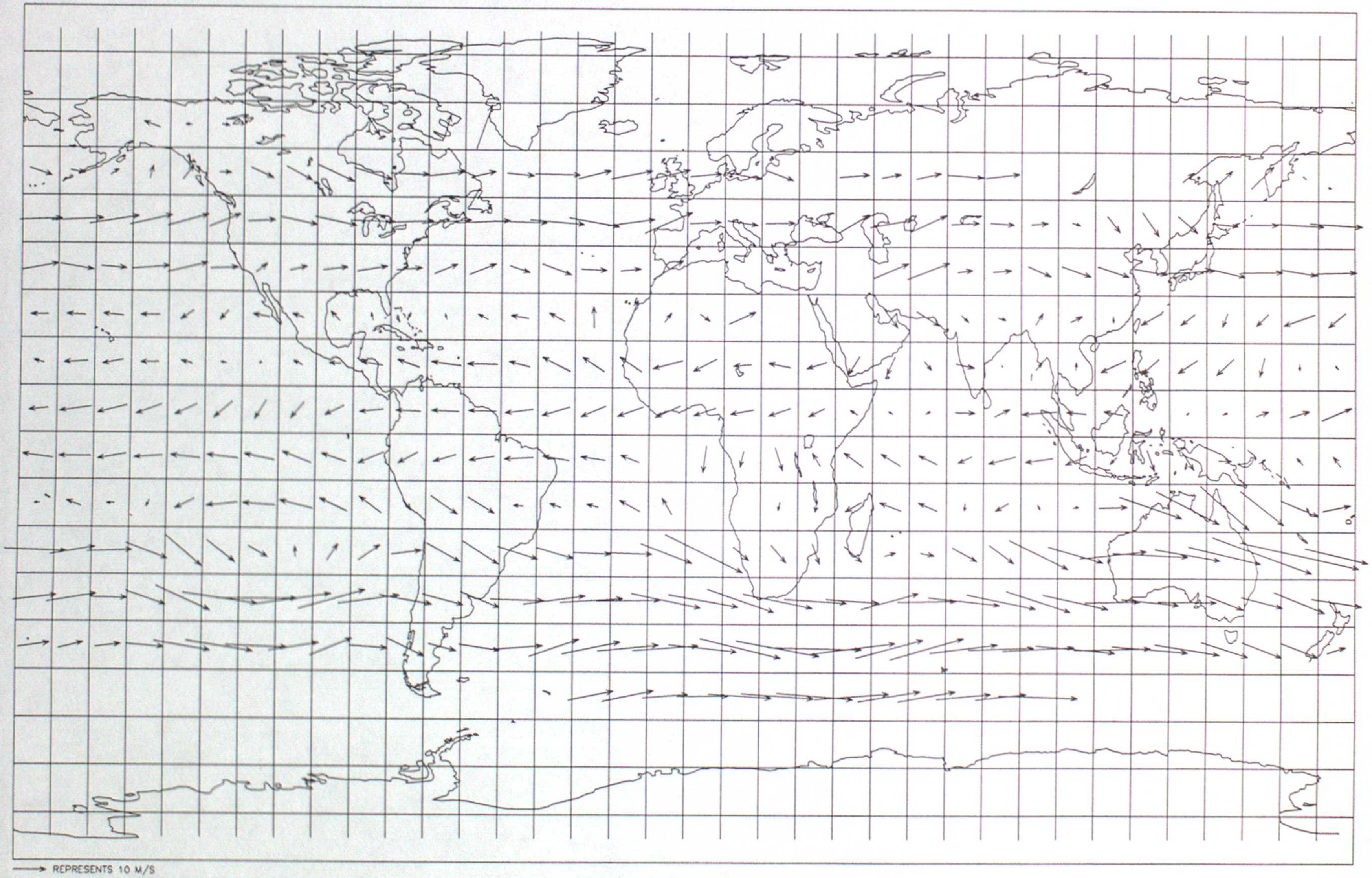
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 7226



		1	5	8	5	1		0	4	6	4	1																							
10	32	68	76	66	53	67	68	50	45	47	40	36	26	9	2	3	2	3	4	3	1	2	2	2	1	1	0			0	1	1	1	0	
25	36	47	86	66	26	51	71	54	42	42	26	25	37	52	17	3	2	2	4	3	3	2	3	2	4	2	1	1	4	11	12	9	8	4	2
20	26	28	29	30	17	20	45	23	27	17	21	29	26	31	25	2	1	1	1	0	0	1	2	1	3	2	5	3	2	2		1	2	2	10
22	26	36	42	33	25	25	38	11	14	16	21	25	42	46	39	5	2	1	1			0	1	2	1	2	3	4	1	2	4	4	4	6	11
17	23	25	27	30	27	21	18	9	8	11	23	14	14	21	10	3	3	4	2	1	3	3	3	1	2	1	2	2	2	1	3	3	3	2	4
45	67	83	93	73	65	52	49	22	17	24	29	58	74	49	5	3	5	5	5	5	6	5	2	1	1	2	3	3	4	0	0	2	2	2	2
33	50	61	48	26	18	8	21	14	40	42	17	38	42	56	4	1	1	1	2	1	4	8	4	3	2	3	4	3	3	1	1	1	1	2	2
17	26	34	41	60	80	66	89	86	54	23	22	11	8	56	20	2	1	0	1	9	9	9	13	5	2	3	8	7	5	2	2	3	2	1	2
21	28	35	27	23	31	32	39	50	44	14	9	36	22	43	32	3	2	1	2	8	6	4	2	2	4	3	4	5	5	4	4	3	3	2	8
38	53	78	67	42	29	44	28	46	64	42	19	29	29	37	39	7	6	7	5	5	3	4	6	6	6	5	5	11	11	11	10	10	10	8	85
18	20	27	35	24	25	42	36	63	65	37	14	19	32	45	21	8	7	7	7	9	8	7	7	6	10	11	8	6	10	16	16	16	13	6	7
														1	1	3	6	7	4	3	2	3	5	5	3	3	1								

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
JUNE 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


REPRESENTS 10 M/S

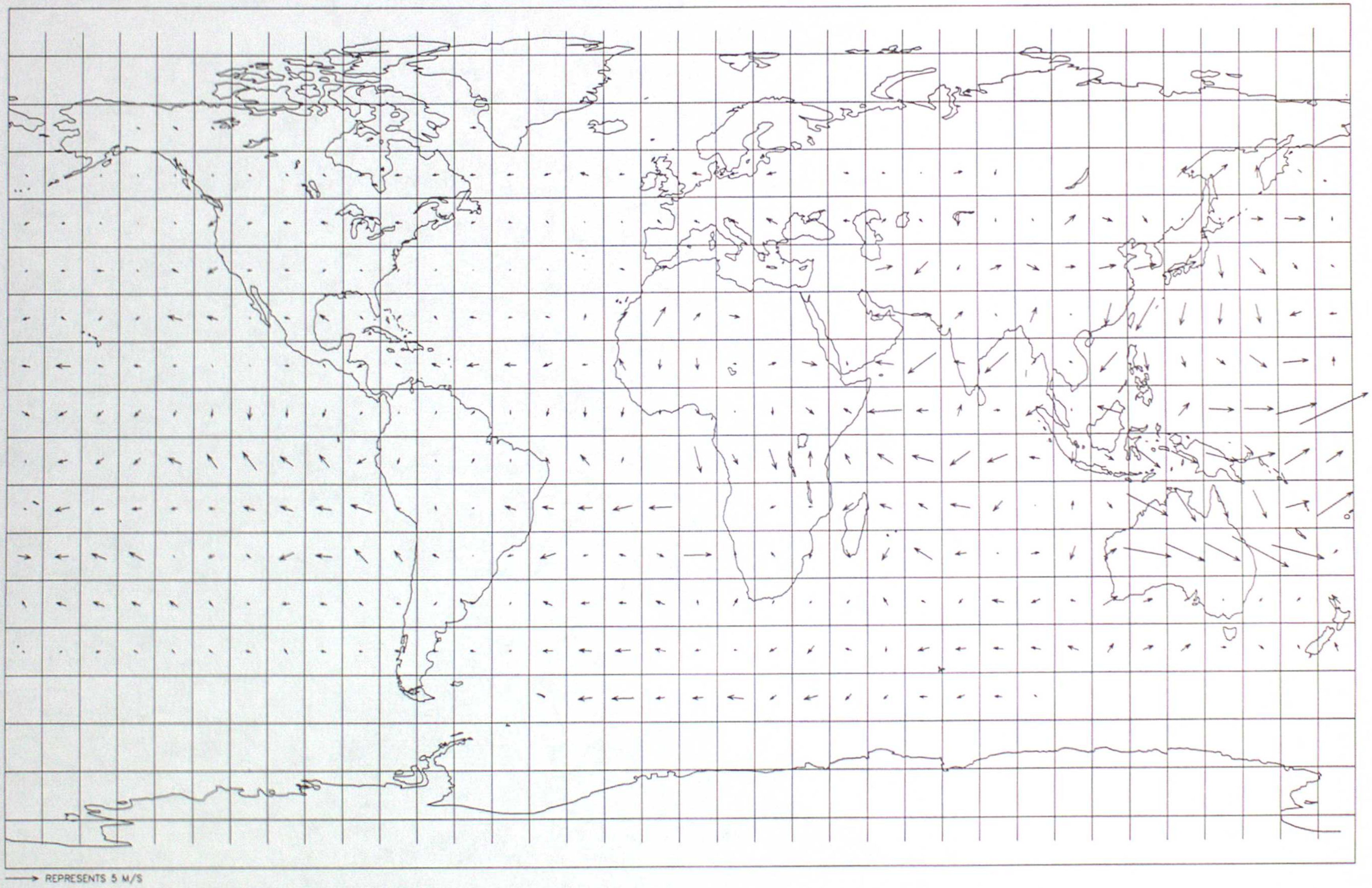
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA

FIGURE 17

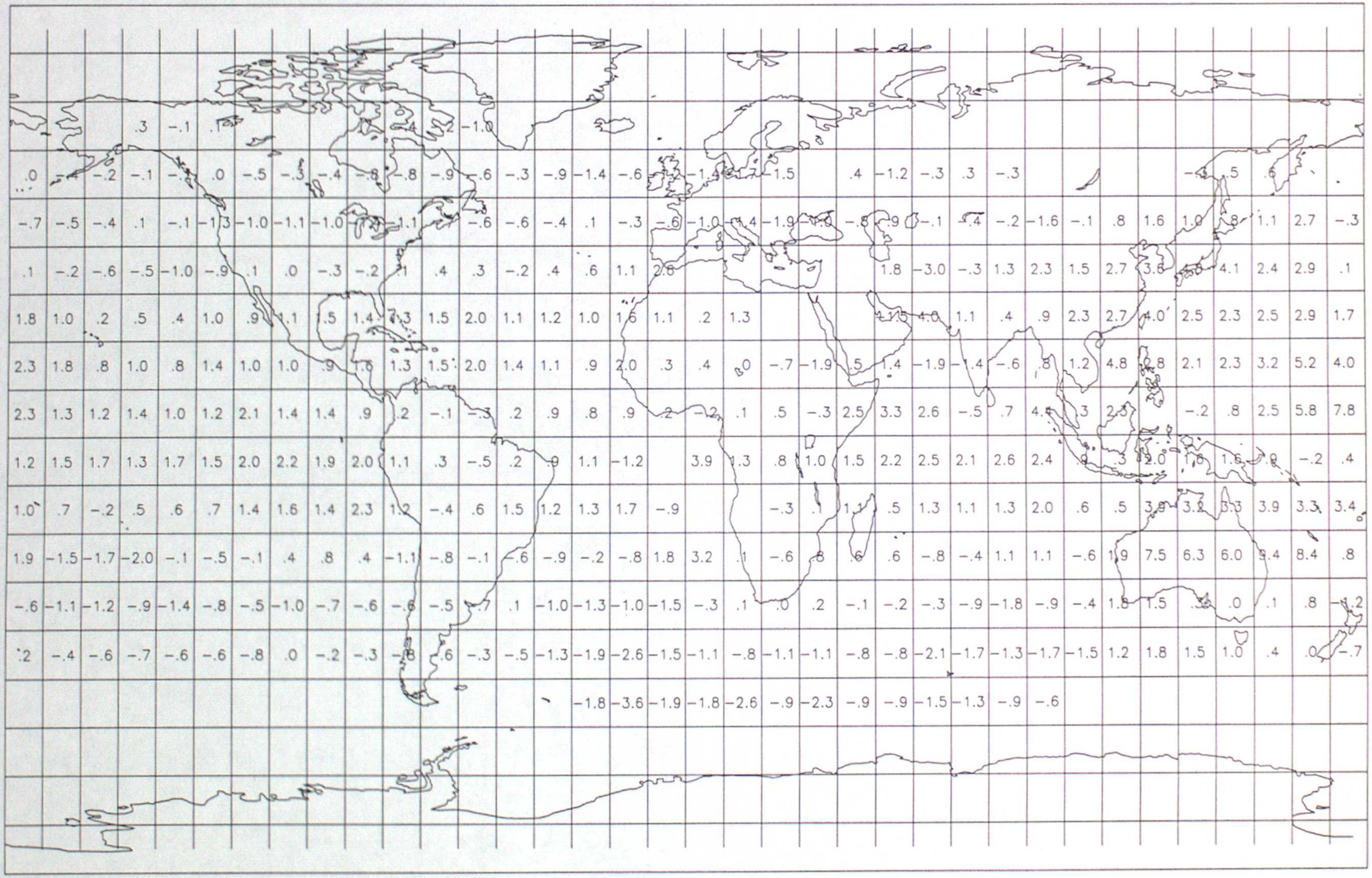
JUNE 2000

ALL OBSERVATIONS

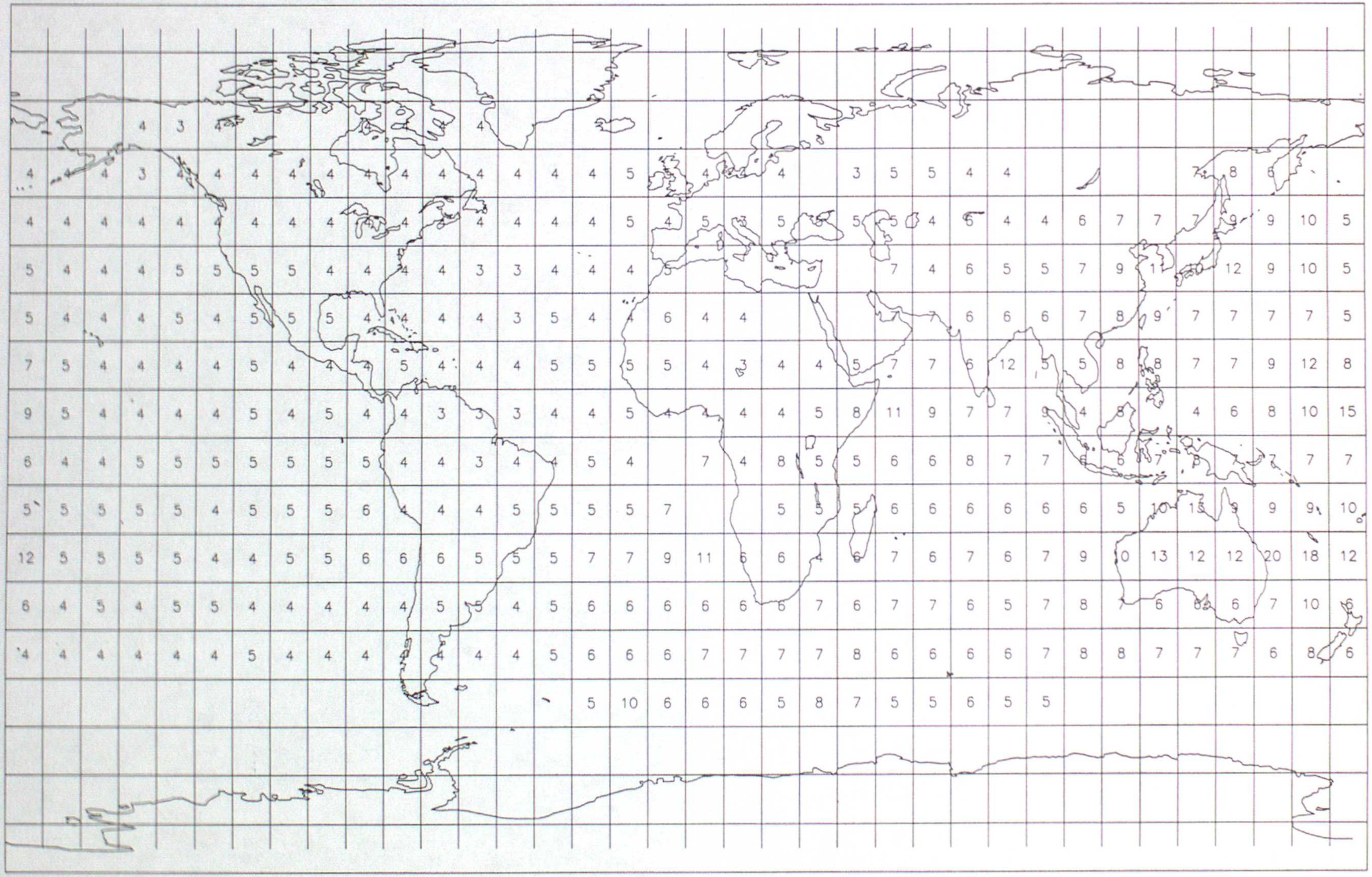
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
JUNE 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

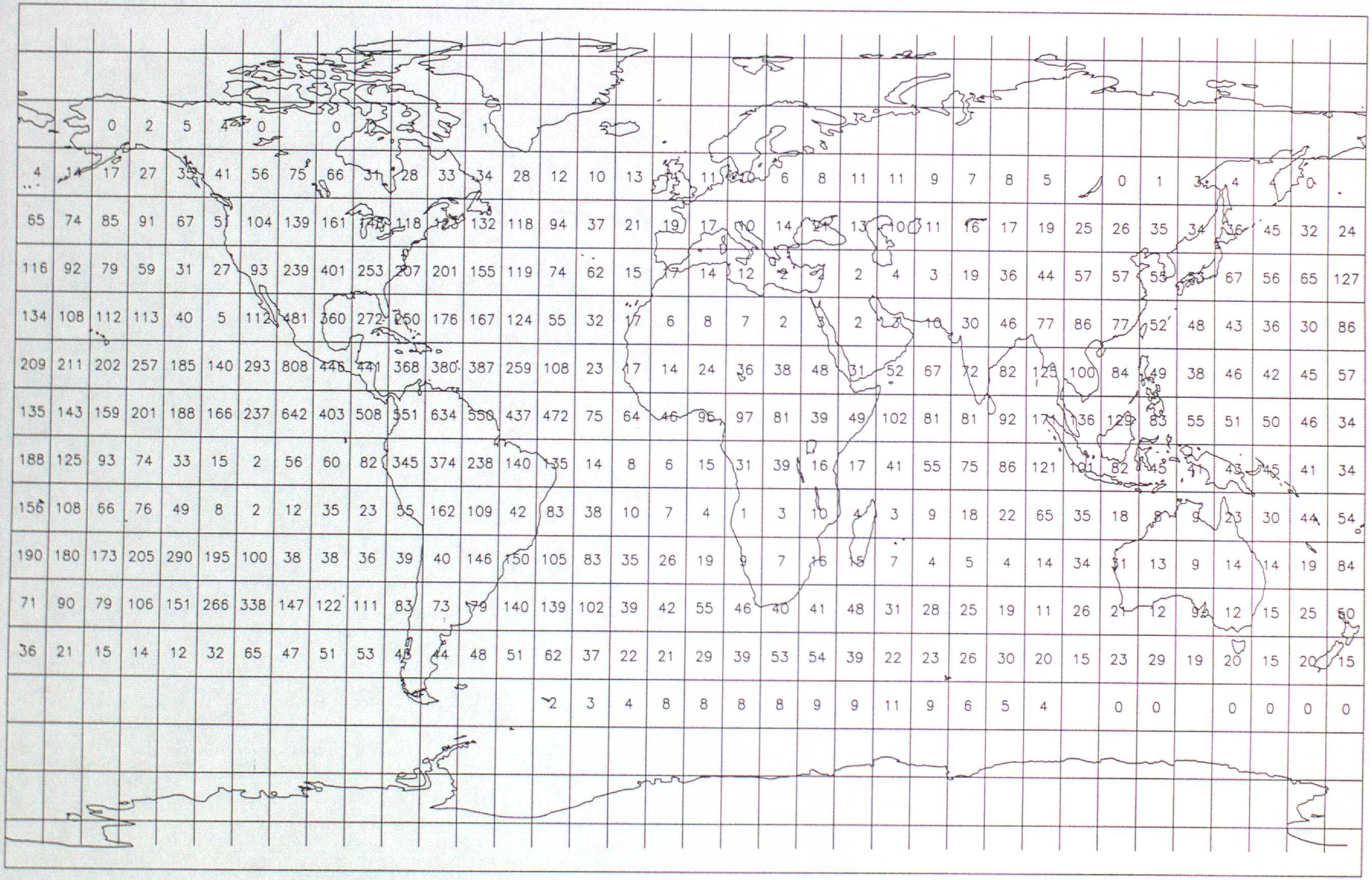

.3 -.1 .1 .4 -.2 -1.0
.0 -.4 -.2 -.1 -.1 .0 -.5 -.3 -.4 -.8 -.8 -.9 -.6 -.3 -.9 -1.4 -.6 -.2 -1.4 .7 -1.5 .4 -1.2 -.3 .3 -.3 -.3 .5 .6
-.7 -.5 -.4 .1 -.1 -1.3 -1.0 -1.1 -1.0 -1.2 -1.1 -.7 -.6 -.6 -.4 .1 -.3 -.6 -1.0 -1.4 -1.9 -1.0 -.8 -.9 -.1 -.4 -.2 -1.6 -.1 .8 1.6 1.0 .8 1.1 2.7 -.3
.1 -.2 -.6 -.5 -1.0 -.9 .1 .0 -.3 -.2 .1 .4 .3 -.2 .4 .6 1.1 2.6 1.8 -3.0 -.3 1.3 2.3 1.5 2.7 3.6 4.0 4.1 2.4 2.9 .1
1.8 1.0 .2 .5 .4 1.0 .9 1.1 1.5 1.4 1.3 1.5 2.0 1.1 1.2 1.0 1.6 1.1 .2 1.3 1.5 4.0 1.1 .4 .9 2.3 2.7 4.0 2.5 2.3 2.5 2.9 1.7
2.3 1.8 .8 1.0 .8 1.4 1.0 1.0 .9 1.6 1.3 1.5 2.0 1.4 1.1 .9 2.0 .3 .4 .0 -.7 -1.9 .5 1.4 -1.9 -1.4 -.6 .8 1.2 4.8 .8 2.1 2.3 3.2 5.2 4.0
2.3 1.3 1.2 1.4 1.0 1.2 2.1 1.4 1.4 .9 .2 -.1 -.3 .2 .9 .8 .9 .2 -.2 .1 .5 -.3 2.5 3.3 2.6 -.5 .7 4.4 .3 2.3 -.2 .8 2.5 5.8 7.8
1.2 1.5 1.7 1.3 1.7 1.5 2.0 2.2 1.9 2.0 1.1 .3 -.5 .2 .9 1.1 -1.2 3.9 1.3 .8 1.0 1.5 2.2 2.5 2.1 2.6 2.4 .9 .3 2.0 1.6 1.6 .9 -.2 .4
1.0 .7 -.2 .5 .6 .7 1.4 1.6 1.4 2.3 1.2 -.4 .6 1.5 1.2 1.3 1.7 -.9 -.3 .1 1.1 .5 1.3 1.1 1.3 2.0 .6 .5 3.9 3.2 3.3 3.9 3.3 3.4
1.9 -1.5 -1.7 -2.0 -.1 -.5 -.1 .4 .8 .4 -1.1 -.8 -.1 -.6 -.9 -.2 -.8 1.8 3.2 .1 -.6 .8 .6 .6 -.8 -.4 1.1 1.1 -.6 1.9 7.5 6.3 6.0 9.4 8.4 .8
-.6 -1.1 -1.2 -.9 -1.4 -.8 -.5 -1.0 -.7 -.6 -.6 -.5 -.7 .1 -1.0 -1.3 -1.0 -1.5 -.3 .1 .0 .2 -.1 -.2 -.3 -.9 -1.8 -.9 -.4 1.8 1.5 .3 .0 .1 .8 -1.2
.2 -.4 -.6 -.7 -.6 -.6 -.8 .0 -.2 -.3 -.8 .6 -.3 -.5 -1.3 -1.9 -2.6 -1.5 -1.1 -.8 -1.1 -1.1 -.8 -.8 -2.1 -1.7 -1.3 -1.7 -1.5 1.2 1.8 1.5 1.0 .4 .0 -.7
-1.8 -3.6 -1.9 -1.8 -2.6 -.9 -2.3 -.9 -.9 -1.5 -1.3 -.9 -.6

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
JUNE 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 3 4 4
4 4 4 3 4 4 4 4 4 4 4 4 4 4 4 4 5 4 4 3 5 5 4 4 7 8 6
4 4 4 4 4 4 4 4 4 4 4 4 4 4 5 4 5 3 5 5 5 4 6 4 4 6 7 7 7 9 9 10 5
5 4 4 4 5 5 5 5 4 4 4 4 3 3 4 4 4 5 7 4 6 5 5 7 9 11 12 9 10 5
5 4 4 4 5 4 5 5 5 4 4 4 4 3 5 4 4 6 4 4 7 7 6 6 6 7 8 9 7 7 7 7 5
7 5 4 4 4 4 5 4 4 4 5 4 4 4 5 5 5 5 4 3 4 4 5 7 7 6 12 5 5 8 8 7 7 9 12 8
9 5 4 4 4 4 5 4 5 4 4 3 3 3 4 4 5 4 4 4 4 5 8 11 9 7 7 9 4 8 4 6 8 10 15
6 4 4 5 5 5 5 5 5 5 4 4 3 4 4 5 4 7 4 8 5 5 6 6 8 7 7 6 6 7 7 7 7 7
5 5 5 5 5 4 5 5 5 6 4 4 4 5 5 5 5 7 5 5 5 6 6 6 6 6 6 5 10 13 9 9 9 10
12 5 5 5 5 4 4 5 5 6 6 6 5 5 5 7 7 9 11 6 6 4 6 7 6 7 6 7 9 0 13 12 12 20 18 12
6 4 5 4 5 5 4 4 4 4 4 5 5 4 5 6 6 6 6 6 6 7 6 7 7 6 5 7 8 7 6 6 6 7 10 6
4 4 4 4 4 4 5 4 4 4 4 4 4 4 5 6 6 6 7 7 7 7 8 6 6 6 6 7 8 8 7 7 7 6 8 6
5 10 6 6 6 5 8 7 5 5 6 5 5

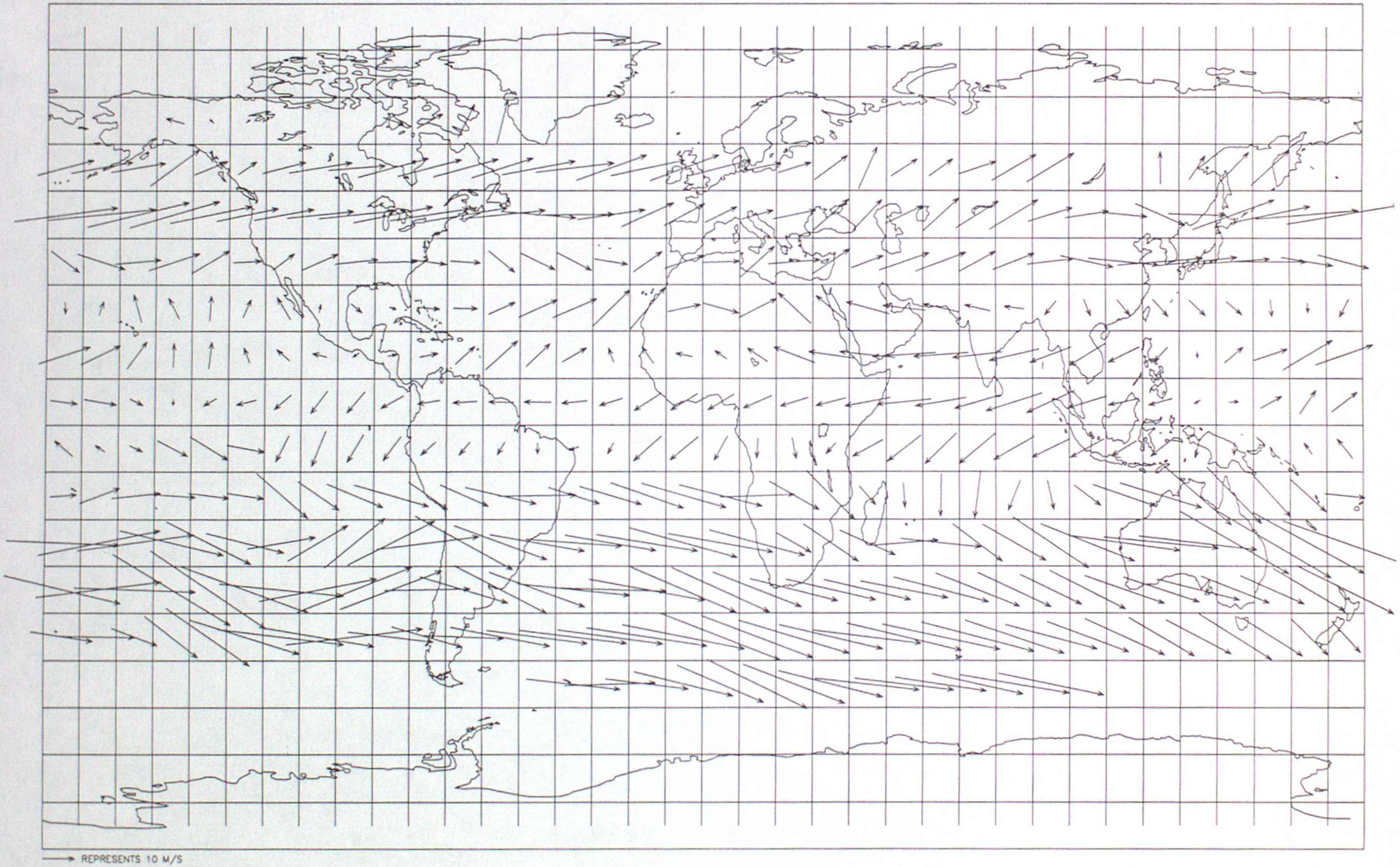
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
JUNE 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 32354



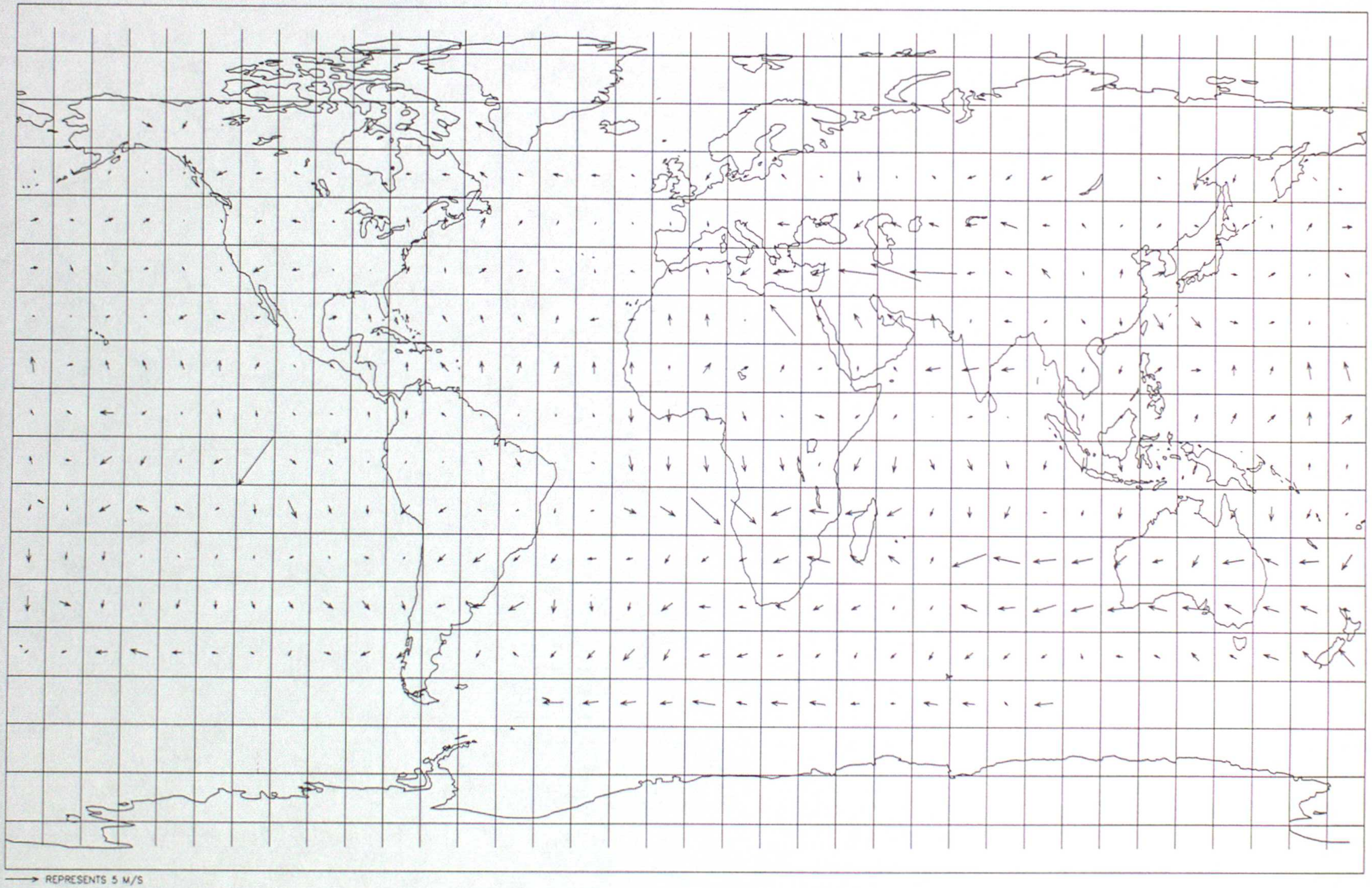
		0	2	5	4	0		0				1																							
4	14	17	27	35	41	56	75	66	31	28	33	34	28	12	10	13	11	11	10	6	8	11	11	9	7	8	5		0	1	3	4	4	0	
65	74	85	91	67	51	104	139	161	148	118	123	132	118	94	37	21	19	17	10	14	21	13	10	11	16	17	19	25	26	35	34	36	45	32	24
116	92	79	59	31	27	93	239	401	253	207	201	155	119	74	62	15	17	14	12	2	2	2	4	3	19	36	44	57	57	55	53	67	56	65	127
134	108	112	113	40	5	112	481	360	272	250	176	167	124	55	32	17	6	8	7	2	3	2	3	10	30	46	77	86	77	52	48	43	36	30	86
209	211	202	257	185	140	293	808	446	441	368	380	387	259	108	23	17	14	24	36	38	48	31	52	67	72	82	125	100	84	49	38	46	42	45	57
135	143	159	201	188	166	237	642	403	508	551	634	550	437	472	75	64	46	95	97	81	39	49	102	81	81	92	171	136	129	83	55	51	50	46	34
188	125	93	74	33	15	2	56	60	82	345	374	238	140	135	14	8	6	15	31	39	16	17	41	55	75	86	121	101	82	45	41	43	45	41	34
156	108	66	76	49	8	2	12	35	23	55	162	109	42	83	38	10	7	4	1	3	10	4	3	9	18	22	65	35	18	8	9	23	30	44	54
190	180	173	205	290	195	100	38	38	36	39	40	146	150	105	83	35	26	19	9	7	16	15	7	4	5	4	14	34	31	13	9	14	14	19	84
71	90	79	106	151	266	338	147	122	111	83	73	79	140	139	102	39	42	55	46	40	41	48	31	28	25	19	11	26	21	12	92	12	15	25	50
36	21	15	14	12	32	65	47	51	53	48	44	48	51	62	37	22	21	29	39	53	54	39	22	23	26	30	20	15	23	29	19	20	15	20	15
														2	3	4	8	8	8	8	9	9	11	9	6	5	4		0	0		0	0	0	0

SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 101–400 HPA FIGURE 21
JUNE 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

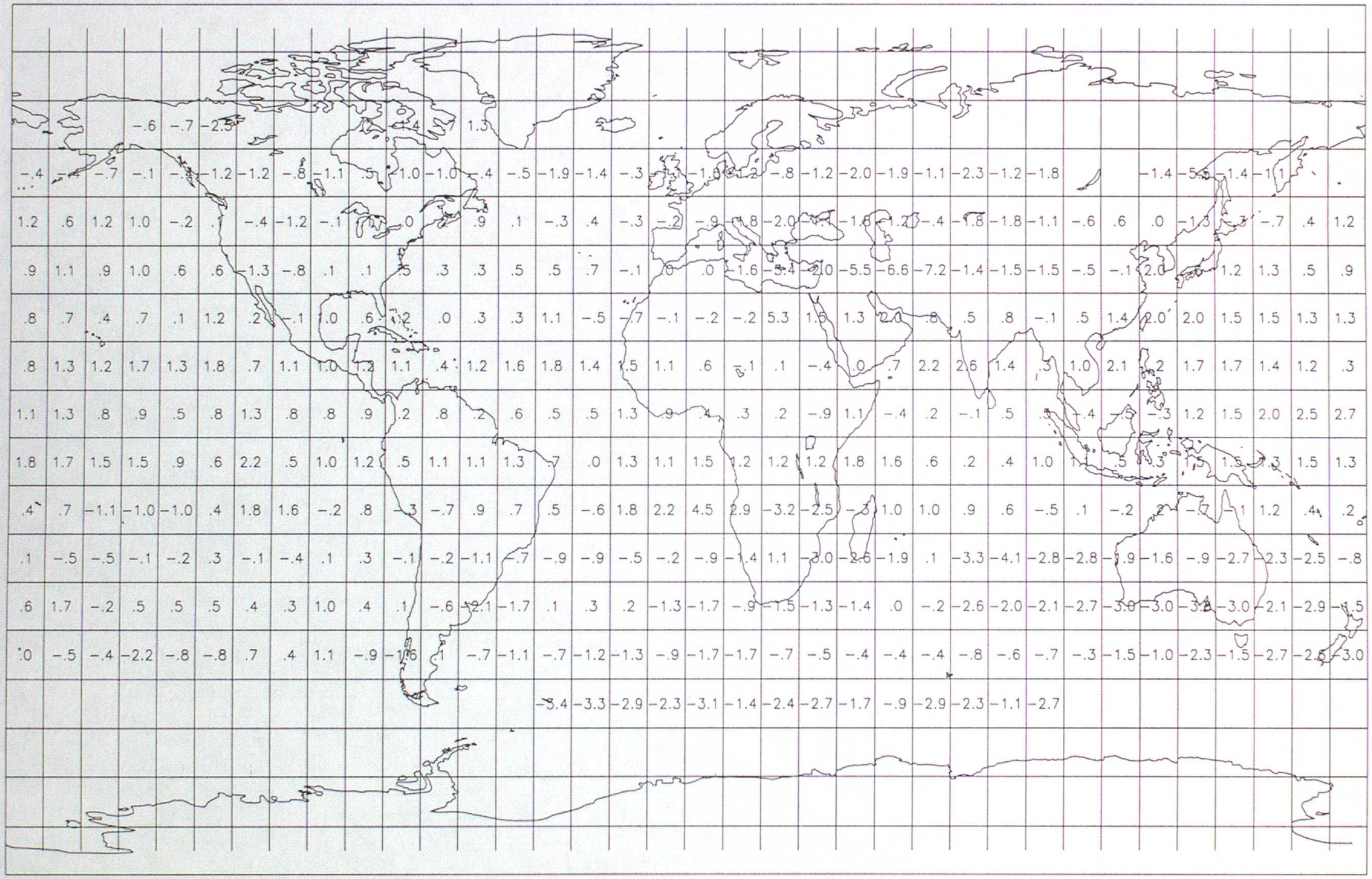

→ REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA
JUNE 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

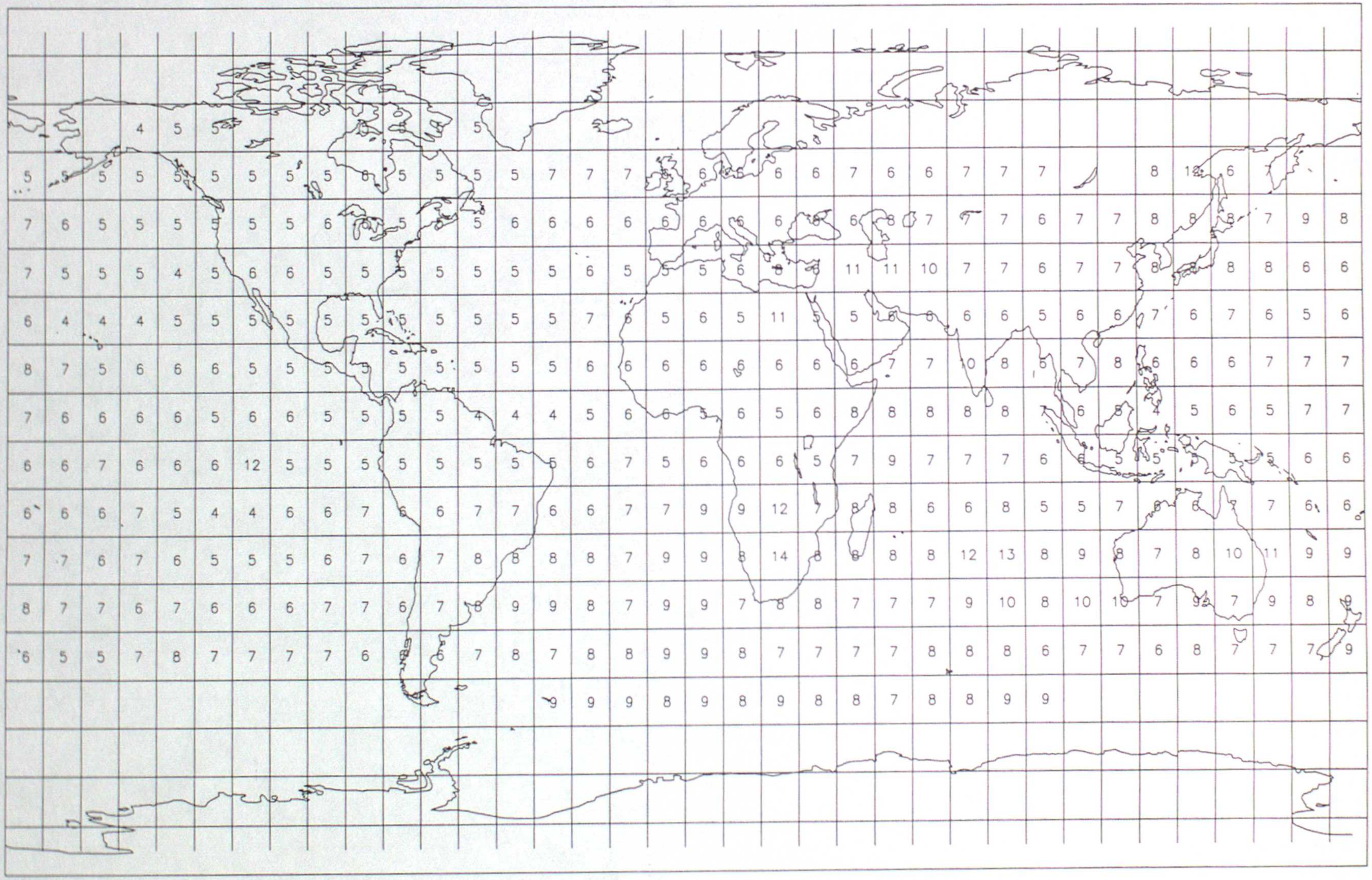
FIGURE 22


→ REPRESENTS 5 M/S

SATOBS : MEAN O−B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
JUNE 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
JUNE 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 5 5 5 5 5
5 5 5 5 5 5 5 5 5 8 5 5 5 5 7 7 7 6 6 5 6 6 7 6 6 7 7 7 8 12 6 7
7 6 5 5 5 5 5 5 6 6 5 5 6 6 6 6 6 6 6 6 8 6 8 7 7 7 6 7 7 8 8 8 7 9 8
7 5 5 5 4 5 6 6 5 5 5 5 5 5 5 6 5 5 5 6 8 6 11 11 10 7 7 6 7 7 8 8 8 8 6 6
6 4 4 4 5 5 5 5 5 5 5 5 5 5 5 7 6 5 6 5 11 5 5 6 6 6 6 5 6 6 7 6 7 6 5 6
8 7 5 6 6 6 5 5 5 5 5 5 5 5 5 6 6 6 6 6 6 6 6 7 7 10 8 5 7 8 6 6 6 7 7 7
7 6 6 6 6 5 6 6 5 5 5 5 4 4 4 5 6 6 5 6 5 6 8 8 8 8 8 7 6 8 4 5 6 5 7 7
6 6 7 6 6 6 12 5 5 5 5 5 5 5 5 6 7 5 6 6 6 5 7 9 7 7 7 6 6 5 5 5 5 5 6 6
6 6 6 7 5 4 4 6 6 7 6 6 7 7 6 6 7 7 9 9 12 7 8 8 6 6 8 5 5 7 6 6 7 7 6 6
7 7 6 7 6 5 5 5 6 7 6 7 8 8 8 8 7 9 9 8 14 8 8 8 8 12 13 8 9 8 7 8 10 11 9 9
8 7 7 6 7 6 6 6 7 7 6 7 8 9 9 8 7 9 9 7 8 8 7 7 7 9 10 8 10 10 7 9 7 9 8 9
6 5 5 7 8 7 7 7 7 6 8 6 7 8 7 8 8 9 9 8 7 7 7 7 8 8 8 6 7 7 6 8 7 7 7 9
9 9 9 8 9 8 9 8 8 7 8 8 9 9

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: JUNE 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

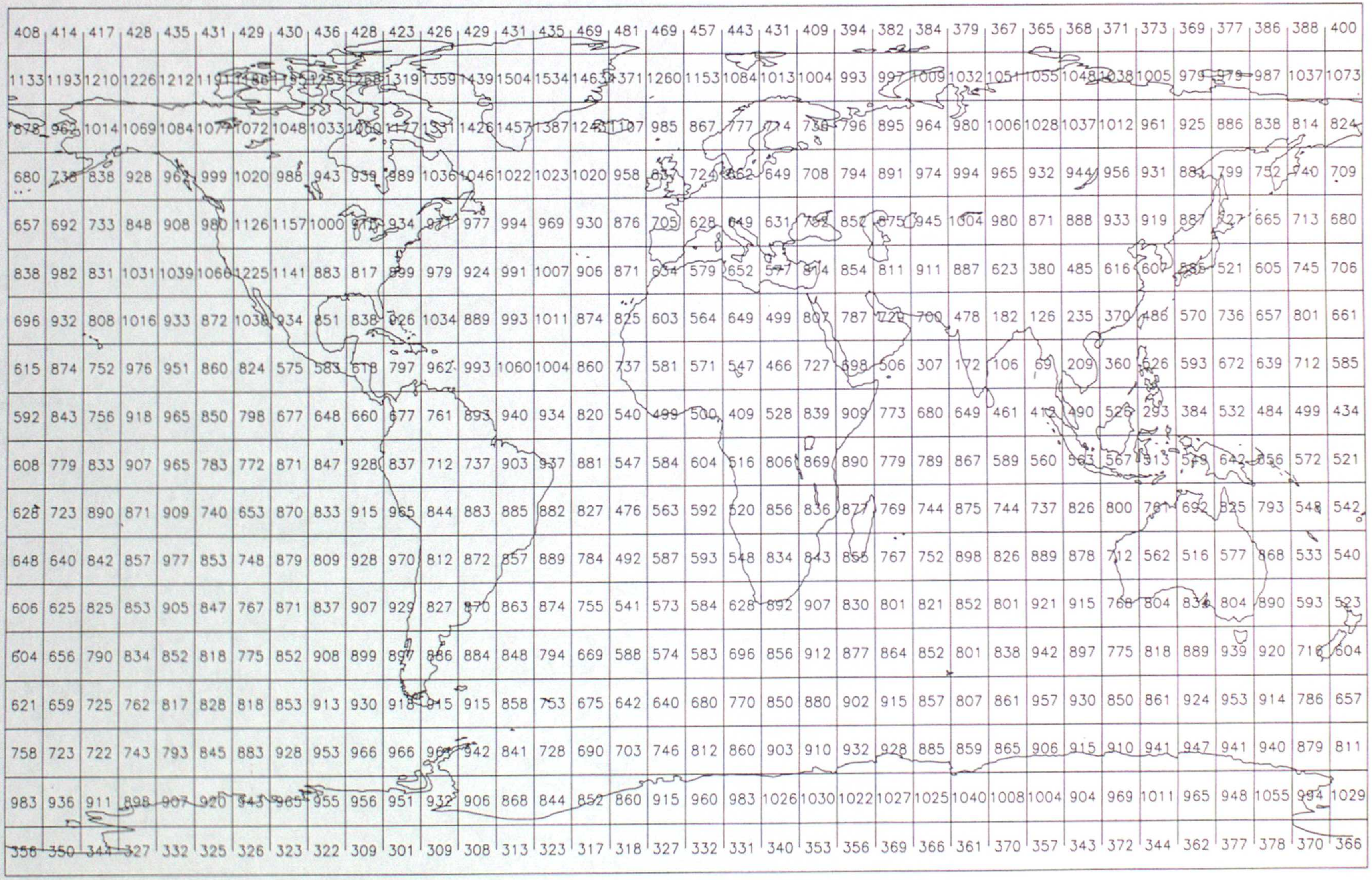
- HIRS8 (Surface)
- HIRS15 (700)
- HIRS11 (500-700)
- HIRS4 (400)
- AMSUA5 (700)
- AMSUA7 (300)
- AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

ATOVS : MEAN DAILY NUMBER OF OBSERVATIONS

FIGURE 25

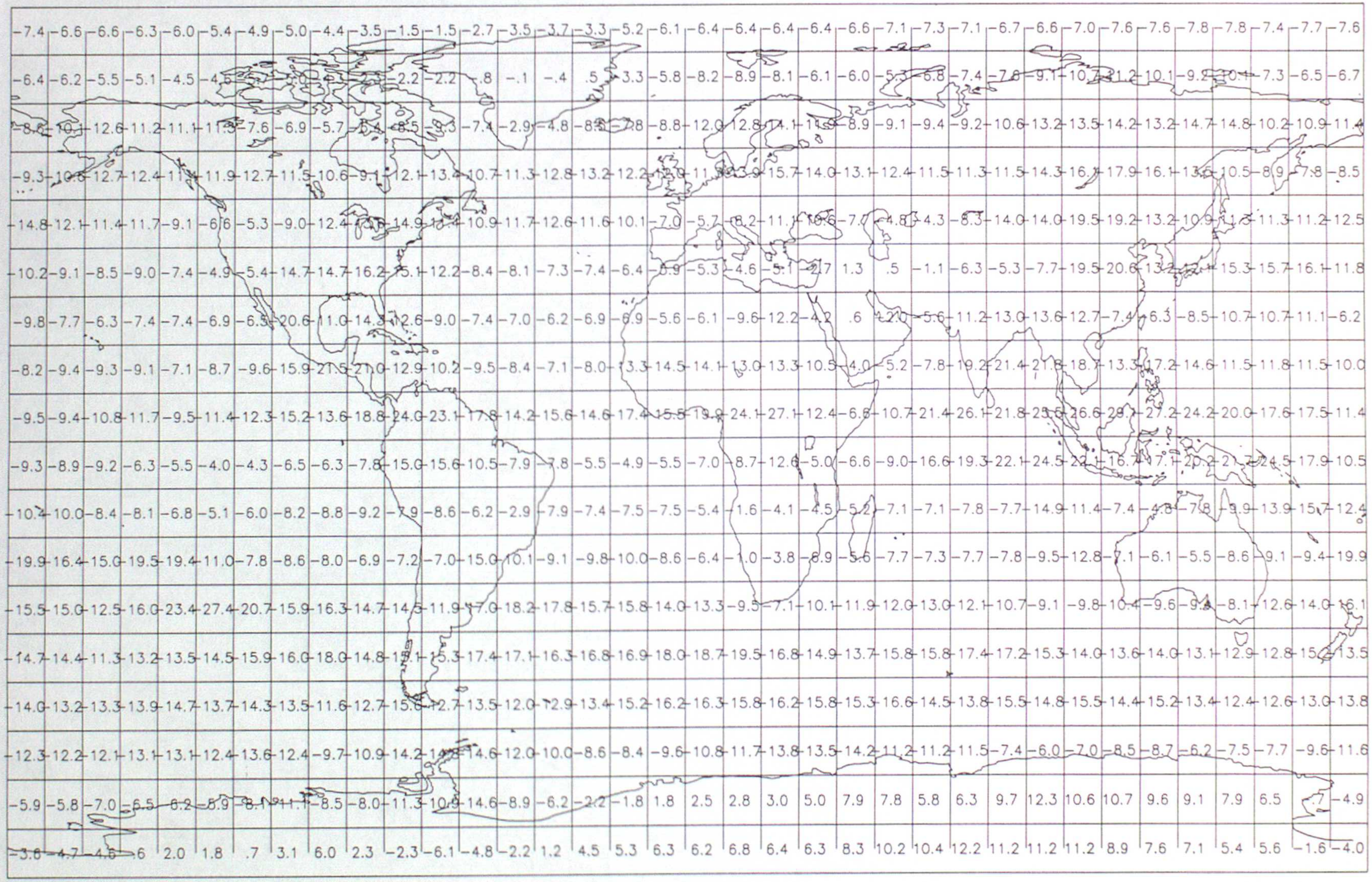
JUNE 2000
NOAA–15, USING ALL OBSERVATIONS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 504085



408	414	417	428	435	431	429	430	436	428	423	426	429	431	435	469	481	469	457	443	431	409	394	382	384	379	367	365	368	371	373	369	377	386	388	400
1133	1193	1210	1226	1212	1191	1186	1195	1253	1268	1319	1359	1439	1504	1534	1463	1371	1260	1153	1084	1013	1004	993	997	1009	1032	1051	1055	1048	1038	1005	979	979	987	1037	1073
878	962	1014	1069	1084	1077	1072	1048	1033	1060	1177	1331	1426	1457	1387	1243	1107	985	867	777	774	736	796	895	964	980	1006	1028	1037	1012	961	925	886	838	814	824
680	738	838	928	962	999	1020	988	943	939	989	1036	1046	1022	1023	1020	958	837	724	662	649	708	794	891	974	994	965	932	944	956	931	881	799	752	740	709
657	692	733	848	908	980	1126	1157	1000	915	934	971	977	994	969	930	876	705	628	649	631	752	852	875	945	1004	980	871	888	933	919	887	727	665	713	680
838	982	831	1031	1039	1066	1225	1141	883	817	899	979	924	991	1007	906	871	654	579	652	577	814	854	811	911	887	623	380	485	616	607	585	521	605	745	706
696	932	808	1016	933	872	1038	934	851	838	926	1034	889	993	1011	874	825	603	564	649	499	807	787	729	700	478	182	126	235	370	486	570	736	657	801	661
615	874	752	976	951	860	824	575	583	618	797	962	993	1060	1004	860	737	581	571	547	466	727	698	506	307	172	106	69	209	360	526	593	672	639	712	585
592	843	756	918	965	850	798	677	648	660	677	761	893	940	934	820	540	499	500	409	528	839	909	773	680	649	461	412	490	526	293	384	532	484	499	434
608	779	833	907	965	783	772	871	847	928	837	712	737	903	937	881	547	584	604	516	806	869	890	779	789	867	589	560	563	567	513	579	642	656	572	521
628	723	890	871	909	740	653	870	833	915	965	844	883	885	882	827	476	563	592	520	856	836	877	769	744	875	744	737	826	800	761	692	825	793	548	542
648	640	842	857	977	853	748	879	809	928	970	812	872	857	889	784	492	587	593	548	834	843	855	767	752	898	826	889	878	712	562	516	577	868	533	540
606	625	825	853	905	847	767	871	837	907	929	827	870	863	874	755	541	573	584	628	892	907	830	801	821	852	801	921	915	768	804	834	804	890	593	523
604	656	790	834	852	818	775	852	908	899	897	886	884	848	794	669	588	574	583	696	856	912	877	864	852	801	838	942	897	775	818	889	939	920	718	604
621	659	725	762	817	828	818	853	913	930	918	915	915	858	753	675	642	640	680	770	850	880	902	915	857	807	861	957	930	850	861	924	953	914	786	657
758	723	722	743	793	845	883	928	953	966	966	961	942	841	728	690	703	746	812	860	903	910	932	928	885	859	865	906	915	910	941	947	941	940	879	811
983	936	911	898	907	920	943	965	955	956	951	932	906	868	844	852	860	915	960	983	1026	1030	1022	1027	1025	1040	1008	1004	904	969	1011	965	948	1055	994	1029
358	350	344	327	332	325	326	323	322	309	301	309	308	313	323	317	318	327	332	331	340	353	356	369	366	361	370	357	343	372	344	362	377	378	370	366

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
JUNE 2000 : HIRS8 channel (Surface)
NOAA-15, USING ALL OBSERVATIONS

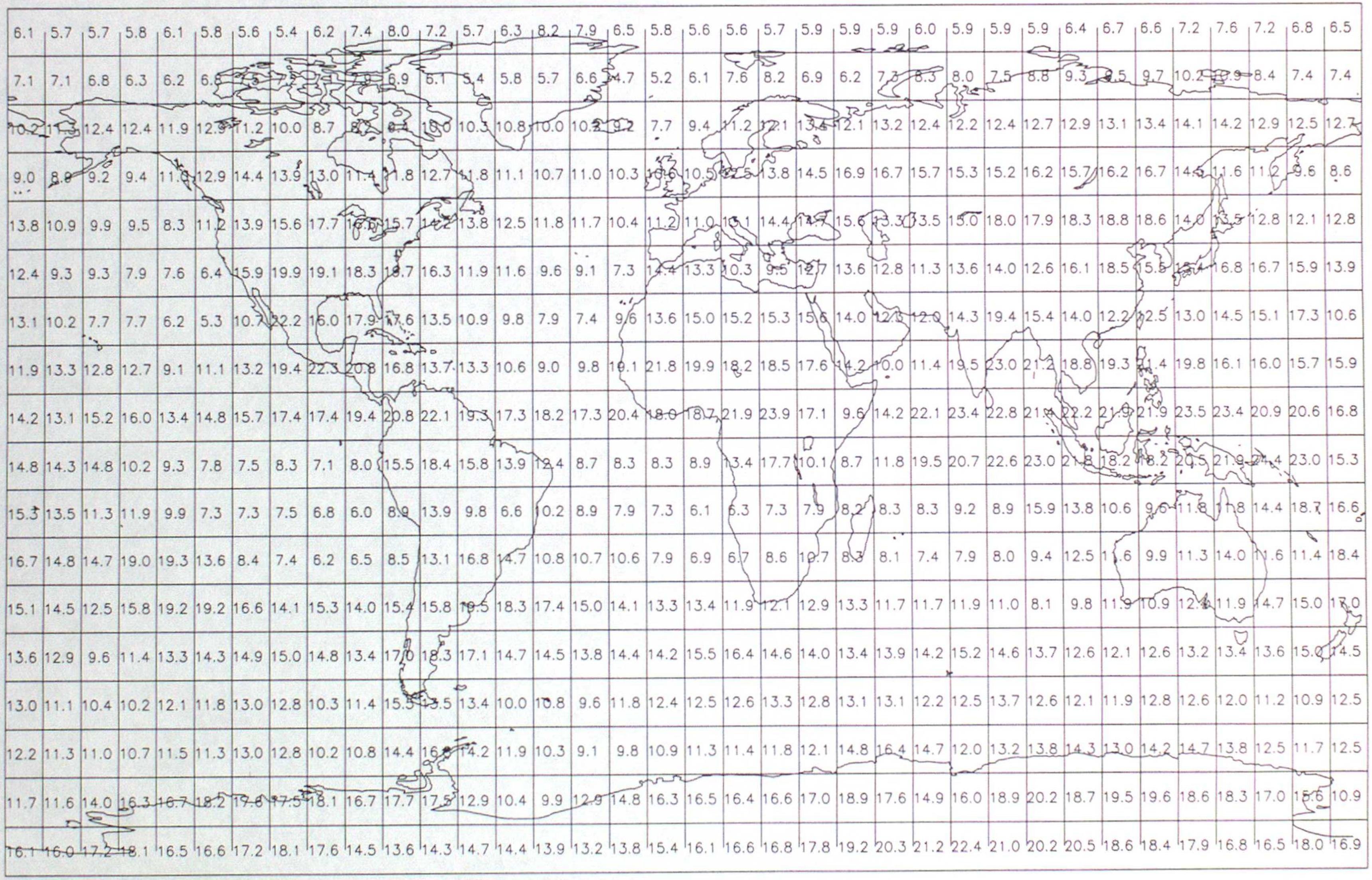
FIGURE 26


-7.4 -6.6 -6.6 -6.3 -6.0 -5.4 -4.9 -5.0 -4.4 -3.5 -1.5 -1.5 -2.7 -3.5 -3.7 -3.3 -5.2 -6.1 -6.4 -6.4 -6.4 -6.4 -6.6 -7.1 -7.3 -7.1 -6.7 -6.6 -7.0 -7.6 -7.6 -7.8 -7.8 -7.4 -7.7 -7.6
-6.4 -6.2 -5.5 -5.1 -4.5 -4.5 -5.7 [illegible] [illegible] [illegible] -2.2 -2.2 -.8 -.1 -.4 .5 -3.3 -5.8 -8.2 -8.9 -8.1 -6.1 -6.0 -5.3 -6.8 -7.4 -7.8 -9.1 -10.7 -11.2 -10.1 -9.2 -10.4 -7.3 -6.5 -6.7
-8.6 -10.1 -12.6 -11.2 -11.1 -11.5 -7.6 -6.9 -5.7 -5.4 -8.5 -9.3 -7.4 -2.9 -4.8 -8.5 -7.8 -8.8 -12.0 -12.8 -14.1 -11.9 -8.9 -9.1 -9.4 -9.2 -10.6 -13.2 -13.5 -14.2 -13.2 -14.7 -14.8 -10.2 -10.9 -11.4
-9.3 -10.6 -12.7 -12.4 -11.4 -11.9 -12.7 -11.5 -10.6 -9.1 -12.1 -13.4 -10.7 -11.3 -12.8 -13.2 -12.2 -12.0 -11.8 -13.9 -15.7 -14.0 -13.1 -12.4 -11.5 -11.3 -11.5 -14.3 -16.1 -17.9 -16.1 -13.6 -10.5 -8.9 -7.8 -8.5
-14.8 -12.1 -11.4 -11.7 -9.1 -6.6 -5.3 -9.0 -12.4 [illegible] -14.9 [illegible] -10.9 -11.7 -12.6 -11.6 -10.1 -7.0 -5.7 -8.2 -11.1 -10.6 -7.0 -4.8 -4.3 -8.3 -14.0 -14.0 -19.5 -19.2 -13.2 -10.9 [illegible] -11.3 -11.2 -12.5
-10.2 -9.1 -8.5 -9.0 -7.4 -4.9 -5.4 -14.7 -14.7 -16.2 -15.1 -12.2 -8.4 -8.1 -7.3 -7.4 -6.4 -5.9 -5.3 -4.6 -5.1 -2.7 1.3 .5 -1.1 -6.3 -5.3 -7.7 -19.5 -20.6 -13.2 -12.1 -15.3 -15.7 -16.1 -11.8
-9.8 -7.7 -6.3 -7.4 -7.4 -6.9 -6.5 -20.6 -11.0 -14.3 -12.6 -9.0 -7.4 -7.0 -6.2 -6.9 -6.9 -5.6 -6.1 -9.6 -12.2 -4.2 .6 -2.0 -5.6 -11.2 -13.0 -13.6 -12.7 -7.4 -6.3 -8.5 -10.7 -10.7 -11.1 -6.2
-8.2 -9.4 -9.3 -9.1 -7.1 -8.7 -9.6 -15.9 -21.5 -21.0 -12.9 -10.2 -9.5 -8.4 -7.1 -8.0 -13.3 -14.5 -14.1 -13.0 -13.3 -10.5 -4.0 -5.2 -7.8 -19.2 -21.4 -21.8 -18.7 -13.3 -17.2 -14.6 -11.5 -11.8 -11.5 -10.0
-9.5 -9.4 -10.8 -11.7 -9.5 -11.4 -12.3 -15.2 -13.6 -18.8 -24.0 -23.1 -17.8 -14.2 -15.6 -14.6 -17.4 -15.5 -19.9 -24.1 -27.1 -12.4 -6.8 -10.7 -21.4 -26.1 -21.8 [illegible] -26.6 [illegible] -27.2 -24.2 -20.0 -17.6 -17.5 -11.4
-9.3 -8.9 -9.2 -6.3 -5.5 -4.0 -4.3 -6.5 -6.3 -7.8 -15.0 -15.6 -10.5 -7.9 -7.8 -5.5 -4.9 -5.5 -7.0 -8.7 -12.6 -5.0 -6.6 -9.0 -16.6 -19.3 -22.1 -24.5 -22.1 -16.7 -17.1 -20.2 -21.7 -24.5 -17.9 -10.5
-10.4 -10.0 -8.4 -8.1 -6.8 -5.1 -6.0 -8.2 -8.8 -9.2 -7.9 -8.6 -6.2 -2.9 -7.9 -7.4 -7.5 -7.5 -5.4 -1.6 -4.1 -4.5 -5.2 -7.1 -7.1 -7.8 -7.7 -14.9 -11.4 -7.4 -4.8 -7.8 -9.9 -13.9 -15.7 -12.4
-19.9 -16.4 -15.0 -19.5 -19.4 -11.0 -7.8 -8.6 -8.0 -6.9 -7.2 -7.0 -15.0 -10.1 -9.1 -9.8 -10.0 -8.6 -6.4 -1.0 -3.8 -8.9 -5.6 -7.7 -7.3 -7.7 -7.8 -9.5 -12.8 -7.1 -6.1 -5.5 -8.6 -9.1 -9.4 -19.9
-15.5 -15.0 -12.5 -16.0 -23.4 -27.4 -20.7 -15.9 -16.3 -14.7 -14.5 -11.9 -17.0 -18.2 -17.8 -15.7 -15.8 -14.0 -13.3 -9.5 -7.1 -10.1 -11.9 -12.0 -13.0 -12.1 -10.7 -9.1 -9.8 -10.4 -9.6 -9.4 -8.1 -12.6 -14.0 -16.1
-14.7 -14.4 -11.3 -13.2 -13.5 -14.5 -15.9 -16.0 -18.0 -14.8 -15.1 -15.3 -17.4 -17.1 -16.3 -16.8 -16.9 -18.0 -18.7 -19.5 -16.8 -14.9 -13.7 -15.8 -15.8 -17.4 -17.2 -15.3 -14.0 -13.6 -14.0 -13.1 -12.9 -12.8 -15.2 -13.5
-14.0 -13.2 -13.3 -13.9 -14.7 -13.7 -14.3 -13.5 -11.6 -12.7 -15.6 -12.7 -13.5 -12.0 -12.9 -13.4 -15.2 -16.2 -16.3 -15.8 -16.2 -15.8 -15.3 -16.6 -14.5 -13.8 -15.5 -14.8 -15.5 -14.4 -15.2 -13.4 -12.4 -12.6 -13.0 -13.8
-12.3 -12.2 -12.1 -13.1 -13.1 -12.4 -13.6 -12.4 -9.7 -10.9 -14.2 [illegible] -14.6 -12.0 -10.0 -8.6 -8.4 -9.6 -10.8 -11.7 -13.8 -13.5 -14.2 -11.2 -11.2 -11.5 -7.4 -6.0 -7.0 -8.5 -8.7 -6.2 -7.5 -7.7 -9.6 -11.6
-5.9 -5.8 -7.0 -6.5 -6.2 -5.9 -8.1 -11.1 -8.5 -8.0 -11.3 -10.9 -14.6 -8.9 -6.2 -2.2 -1.8 1.8 2.5 2.8 3.0 5.0 7.9 7.8 5.8 6.3 9.7 12.3 10.6 10.7 9.6 9.1 7.9 6.5 .7 -4.9
-3.6 -4.7 -4.6 .6 2.0 1.8 .7 3.1 6.0 2.3 -2.3 -6.1 -4.8 -2.2 1.2 4.5 5.3 6.3 6.2 6.8 6.4 6.3 8.3 10.2 10.4 12.2 11.2 11.2 11.2 8.9 7.6 7.1 5.4 5.6 -1.6 -4.0

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)

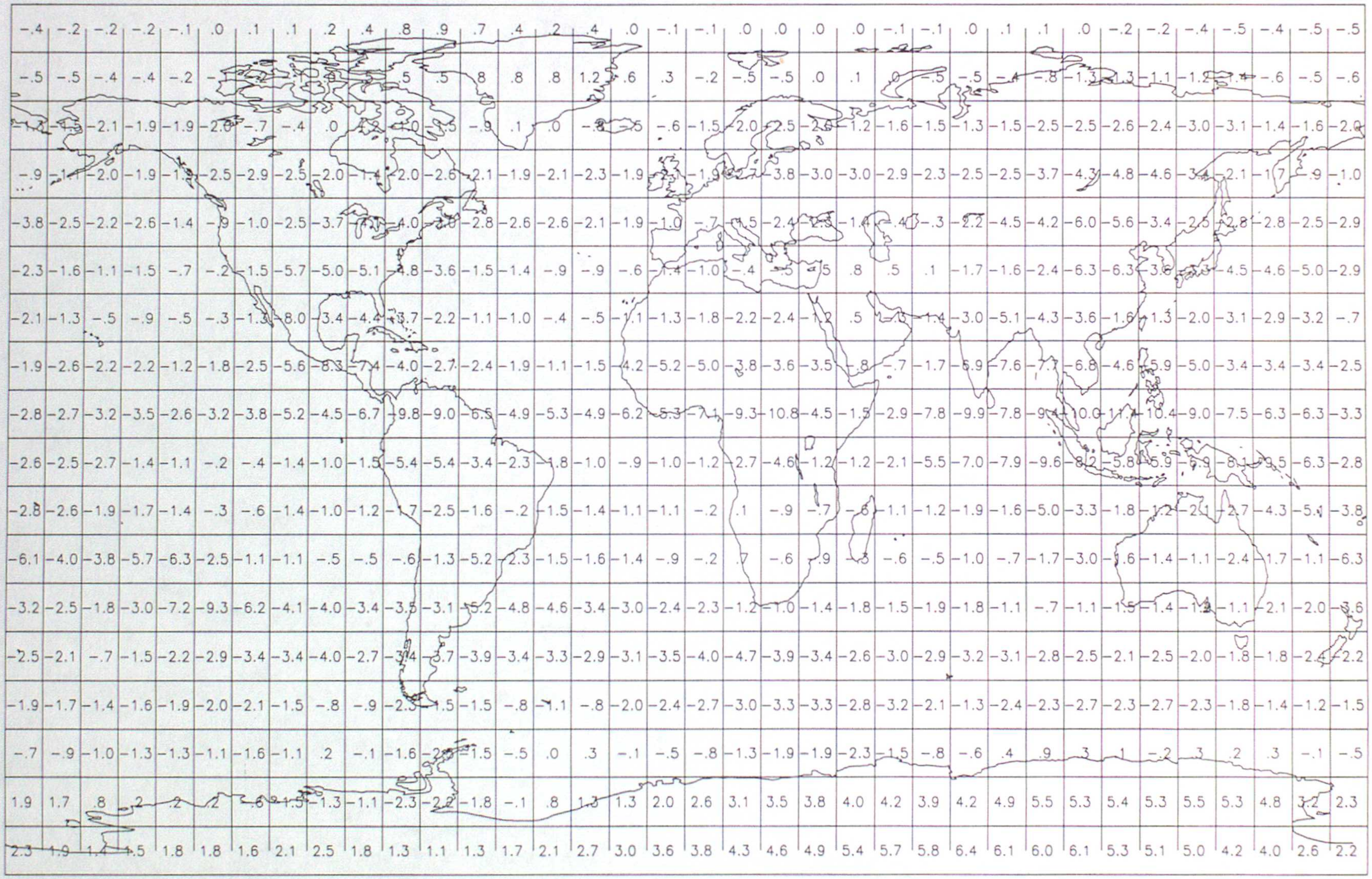
FIGURE 27

JUNE 2000 : HIRS8 channel (Surface)
NOAA-15, USING ALL OBSERVATIONS



6.1	5.7	5.7	5.8	6.1	5.8	5.6	5.4	6.2	7.4	8.0	7.2	5.7	6.3	8.2	7.9	6.5	5.8	5.6	5.6	5.7	5.9	5.9	5.9	6.0	5.9	5.9	5.9	6.4	6.7	6.6	7.2	7.6	7.2	6.8	6.5
7.1	7.1	6.8	6.3	6.2	6.8	7.5	[illegible]	[illegible]	7.8	6.9	6.1	5.4	5.8	5.7	6.6	4.7	5.2	6.1	7.6	8.2	6.9	6.2	7.3	8.3	8.0	7.5	8.8	9.3	8.5	9.7	10.2	10.9	8.4	7.4	7.4
10.2	11.3	12.4	12.4	11.9	12.9	11.2	10.0	8.7	[illegible]	8.4	10.0	10.3	10.8	10.0	10.2	9.2	7.7	9.4	11.2	12.1	13.4	12.1	13.2	12.4	12.2	12.4	12.7	12.9	13.1	13.4	14.1	14.2	12.9	12.5	12.7
9.0	8.8	9.2	9.4	11.0	12.9	14.4	13.9	13.0	11.4	11.8	12.7	11.8	11.1	10.7	11.0	10.3	10.6	10.5	12.5	13.8	14.5	16.9	16.7	15.7	15.3	15.2	16.2	15.7	16.2	16.7	14.5	11.6	11.2	9.6	8.6
13.8	10.9	9.9	9.5	8.3	11.2	13.9	15.6	17.7	16.0	15.7	14.2	13.8	12.5	11.8	11.7	10.4	11.2	11.0	13.1	14.4	14.7	15.6	13.3	13.5	15.0	18.0	17.9	18.3	18.8	18.6	14.0	13.5	12.8	12.1	12.8
12.4	9.3	9.3	7.9	7.6	6.4	15.9	19.9	19.1	18.3	18.7	16.3	11.9	11.6	9.6	9.1	7.3	14.4	13.3	10.3	9.5	12.7	13.6	12.8	11.3	13.6	14.0	12.6	16.1	18.5	15.5	13.4	16.8	16.7	15.9	13.9
13.1	10.2	7.7	7.7	6.2	5.3	10.7	22.2	16.0	17.9	17.6	13.5	10.9	9.8	7.9	7.4	9.6	13.6	15.0	15.2	15.3	15.6	14.0	12.3	12.0	14.3	19.4	15.4	14.0	12.2	12.5	13.0	14.5	15.1	17.3	10.6
11.9	13.3	12.8	12.7	9.1	11.1	13.2	19.4	22.3	20.8	16.8	13.7	13.3	10.6	9.0	9.8	19.1	21.8	19.9	18.2	18.5	17.6	14.2	10.0	11.4	19.5	23.0	21.2	18.8	19.3	21.4	19.8	16.1	16.0	15.7	15.9
14.2	13.1	15.2	16.0	13.4	14.8	15.7	17.4	17.4	19.4	20.8	22.1	19.3	17.3	18.2	17.3	20.4	18.0	18.7	21.9	23.9	17.1	9.6	14.2	22.1	23.4	22.8	21.4	22.2	21.9	21.9	23.5	23.4	20.9	20.6	16.8
14.8	14.3	14.8	10.2	9.3	7.8	7.5	8.3	7.1	8.0	15.5	18.4	15.8	13.9	12.4	8.7	8.3	8.3	8.9	13.4	17.7	10.1	8.7	11.8	19.5	20.7	22.6	23.0	21.8	18.2	18.2	20.5	21.9	24.4	23.0	15.3
15.3	13.5	11.3	11.9	9.9	7.3	7.3	7.5	6.8	6.0	8.9	13.9	9.8	6.6	10.2	8.9	7.9	7.3	6.1	6.3	7.3	7.9	8.2	8.3	8.3	9.2	8.9	15.9	13.8	10.6	9.6	11.8	11.8	14.4	18.7	16.6
16.7	14.8	14.7	19.0	19.3	13.6	8.4	7.4	6.2	6.5	8.5	13.1	16.8	14.7	10.8	10.7	10.6	7.9	6.9	6.7	8.6	10.7	8.3	8.1	7.4	7.9	8.0	9.4	12.5	11.6	9.9	11.3	14.0	11.6	11.4	18.4
15.1	14.5	12.5	15.8	19.2	19.2	16.6	14.1	15.3	14.0	15.4	15.8	19.5	18.3	17.4	15.0	14.1	13.3	13.4	11.9	12.1	12.9	13.3	11.7	11.7	11.9	11.0	8.1	9.8	11.9	10.9	12.4	11.9	14.7	15.0	17.0
13.6	12.9	9.6	11.4	13.3	14.3	14.9	15.0	14.8	13.4	17.0	18.3	17.1	14.7	14.5	13.8	14.4	14.2	15.5	16.4	14.6	14.0	13.4	13.9	14.2	15.2	14.6	13.7	12.6	12.1	12.6	13.2	13.4	13.6	15.0	14.5
13.0	11.1	10.4	10.2	12.1	11.8	13.0	12.8	10.3	11.4	15.5	13.5	13.4	10.0	10.8	9.6	11.8	12.4	12.5	12.6	13.3	12.8	13.1	13.1	12.2	12.5	13.7	12.6	12.1	11.9	12.8	12.6	12.0	11.2	10.9	12.5
12.2	11.3	11.0	10.7	11.5	11.3	13.0	12.8	10.2	10.8	14.4	[illegible]	14.2	11.9	10.3	9.1	9.8	10.9	11.3	11.4	11.8	12.1	14.8	16.4	14.7	12.0	13.2	13.8	14.3	13.0	14.2	14.7	13.8	12.5	11.7	12.5
11.7	11.6	14.0	16.3	16.7	18.2	17.6	17.5	18.1	16.7	17.7	17.5	12.9	10.4	9.9	12.9	14.8	16.3	16.5	16.4	16.6	17.0	18.9	17.6	14.9	16.0	18.9	20.2	18.7	19.5	19.6	18.6	18.3	17.0	15.6	10.9
16.1	16.0	17.2	18.1	16.5	16.6	17.2	18.1	17.6	14.5	13.6	14.3	14.7	14.4	13.9	13.2	13.8	15.4	16.1	16.6	16.8	17.8	19.2	20.3	21.2	22.4	21.0	20.2	20.5	18.6	18.4	17.9	16.8	16.5	18.0	16.9

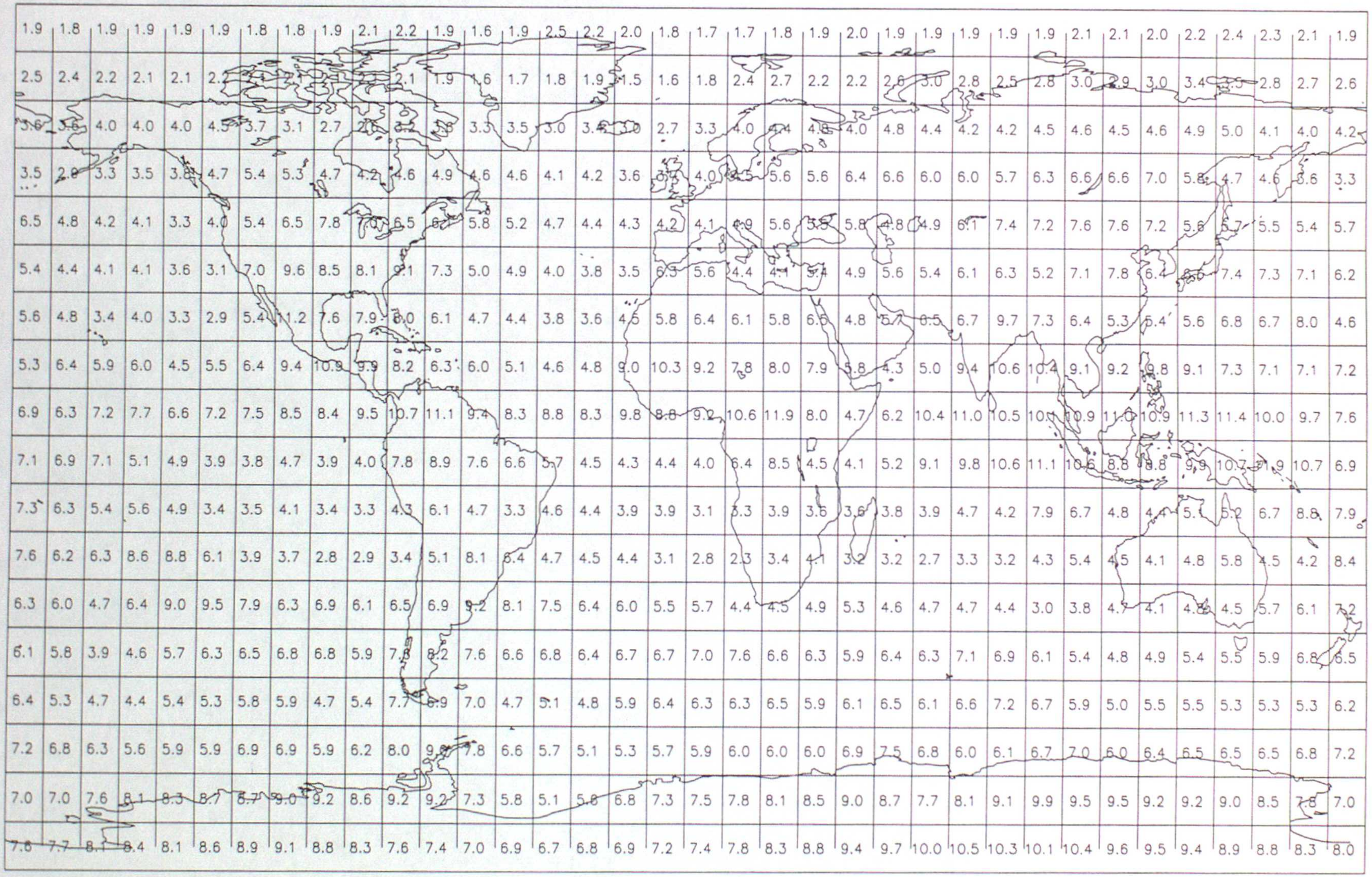
ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 28
JUNE 2000 : HIRS15 Channel (700 hPa)
NOAA−15, USING ALL OBSERVATIONS



−.4	−.2	−.2	−.2	−.1	.0	.1	.1	.2	.4	.8	.9	.7	.4	.2	.4	.0	−.1	−.1	.0	.0	.0	.0	−.1	−.1	.0	.1	.1	.0	−.2	−.2	−.4	−.5	−.4	−.5	−.5
−.5	−.5	−.4	−.4	−.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.5	.5	.8	.8	.8	1.2	.6	.3	−.2	−.5	−.5	.0	.1	.0	−.5	−.5	−.4	−.8	−1.3	−1.3	−1.1	−1.2	−1.4	−.6	−.5	−.6
−1.3	−1.5	−2.1	−1.9	−1.9	−2.0	−.7	−.4	.0	−1.2	−1.0	−1.5	−.9	.1	.0	−.8	−.5	−.6	−1.5	−2.0	−2.5	−2.6	−1.2	−1.6	−1.5	−1.3	−1.5	−2.5	−2.5	−2.6	−2.4	−3.0	−3.1	−1.4	−1.6	−2.0
−.9	−1.1	−2.0	−1.9	−1.3	−2.5	−2.9	−2.5	−2.0	−1.4	−2.0	−2.6	−2.1	−1.9	−2.1	−2.3	−1.9	−2.1	−1.9	−2.7	−3.8	−3.0	−3.0	−2.9	−2.3	−2.5	−2.5	−3.7	−4.3	−4.8	−4.6	−3.4	−2.1	−1.7	−.9	−1.0
−3.8	−2.5	−2.2	−2.6	−1.4	−.9	−1.0	−2.5	−3.7	−4.1	−4.0	−3.0	−2.8	−2.6	−2.6	−2.1	−1.9	−1.0	−.7	−4.5	−2.4	−2.3	−1.4	−.4	−.3	−2.2	−4.5	−4.2	−6.0	−5.6	−3.4	−2.5	−2.8	−2.8	−2.5	−2.9
−2.3	−1.6	−1.1	−1.5	−.7	−.2	−1.5	−5.7	−5.0	−5.1	−4.8	−3.6	−1.5	−1.4	−.9	−.9	−.6	−1.4	−1.0	−.4	−.5	.5	.8	.5	.1	−1.7	−1.6	−2.4	−6.3	−6.3	−3.6	−3.3	−4.5	−4.6	−5.0	−2.9
−2.1	−1.3	−.5	−.9	−.5	−.3	−1.3	−8.0	−3.4	−4.4	−3.7	−2.2	−1.1	−1.0	−.4	−.5	−1.1	−1.3	−1.8	−2.2	−2.4	−1.2	.5	[illegible]	−1.4	−3.0	−5.1	−4.3	−3.6	−1.6	−1.3	−2.0	−3.1	−2.9	−3.2	−.7
−1.9	−2.6	−2.2	−2.2	−1.2	−1.8	−2.5	−5.6	−8.3	−7.4	−4.0	−2.7	−2.4	−1.9	−1.1	−1.5	−4.2	−5.2	−5.0	−3.8	−3.6	−3.5	−.8	−.7	−1.7	−6.9	−7.6	−7.7	−6.8	−4.6	−5.9	−5.0	−3.4	−3.4	−3.4	−2.5
−2.8	−2.7	−3.2	−3.5	−2.6	−3.2	−3.8	−5.2	−4.5	−6.7	−9.8	−9.0	−6.5	−4.9	−5.3	−4.9	−6.2	−5.3	−7.1	−9.3	−10.8	−4.5	−1.5	−2.9	−7.8	−9.9	−7.8	−9.4	−10.0	−11.4	−10.4	−9.0	−7.5	−6.3	−6.3	−3.3
−2.6	−2.5	−2.7	−1.4	−1.1	−.2	−.4	−1.4	−1.0	−1.5	−5.4	−5.4	−3.4	−2.3	−1.8	−1.0	−.9	−1.0	−1.2	−2.7	−4.6	−1.2	−1.2	−2.1	−5.5	−7.0	−7.9	−9.6	−8.2	−5.8	−5.9	−6.9	−8.1	−9.5	−6.3	−2.8
−2.8	−2.6	−1.9	−1.7	−1.4	−.3	−.6	−1.4	−1.0	−1.2	−1.7	−2.5	−1.6	−.2	−1.5	−1.4	−1.1	−1.1	−.2	.1	−.9	−.7	−.6	−1.1	−1.2	−1.9	−1.6	−5.0	−3.3	−1.8	−1.2	−2.1	−2.7	−4.3	−5.1	−3.8
−6.1	−4.0	−3.8	−5.7	−6.3	−2.5	−1.1	−1.1	−.5	−.5	−.6	−1.3	−5.2	−2.3	−1.5	−1.6	−1.4	−.9	−.2	.7	−.6	.9	−.3	−.6	−.5	−1.0	−.7	−1.7	−3.0	−1.6	−1.4	−1.1	−2.4	−1.7	−1.1	−6.3
−3.2	−2.5	−1.8	−3.0	−7.2	−9.3	−6.2	−4.1	−4.0	−3.4	−3.5	−3.1	−5.2	−4.8	−4.6	−3.4	−3.0	−2.4	−2.3	−1.2	−1.0	−1.4	−1.8	−1.5	−1.9	−1.8	−1.1	−.7	−1.1	−1.5	−1.4	−1.2	−1.1	−2.1	−2.0	−3.6
−2.5	−2.1	−.7	−1.5	−2.2	−2.9	−3.4	−3.4	−4.0	−2.7	−3.4	−3.7	−3.9	−3.4	−3.3	−2.9	−3.1	−3.5	−4.0	−4.7	−3.9	−3.4	−2.6	−3.0	−2.9	−3.2	−3.1	−2.8	−2.5	−2.1	−2.5	−2.0	−1.8	−1.8	−2.4	−2.2
−1.9	−1.7	−1.4	−1.6	−1.9	−2.0	−2.1	−1.5	−.8	−.9	−2.3	−1.5	−1.5	−.8	−1.1	−.8	−2.0	−2.4	−2.7	−3.0	−3.3	−3.3	−2.8	−3.2	−2.1	−1.3	−2.4	−2.3	−2.7	−2.3	−2.7	−2.3	−1.8	−1.4	−1.2	−1.5
−.7	−.9	−1.0	−1.3	−1.3	−1.1	−1.6	−1.1	.2	−.1	−1.6	[illegible]	−1.5	−.5	.0	.3	−.1	−.5	−.8	−1.3	−1.9	−1.9	−2.3	−1.5	−.8	−.6	.4	.9	.3	.1	−.2	.3	.2	.3	−.1	−.5
1.9	1.7	.8	.2	.2	.2	−.6	−1.5	−1.3	−1.1	−2.3	−2.2	−1.8	−.1	.8	1.3	1.3	2.0	2.6	3.1	3.5	3.8	4.0	4.2	3.9	4.2	4.9	5.5	5.3	5.4	5.3	5.5	5.3	4.8	3.2	2.3
2.3	1.9	1.4	1.5	1.8	1.8	1.6	2.1	2.5	1.8	1.3	1.1	1.3	1.7	2.1	2.7	3.0	3.6	3.8	4.3	4.6	4.9	5.4	5.7	5.8	6.4	6.1	6.0	6.1	5.3	5.1	5.0	4.2	4.0	2.6	2.2

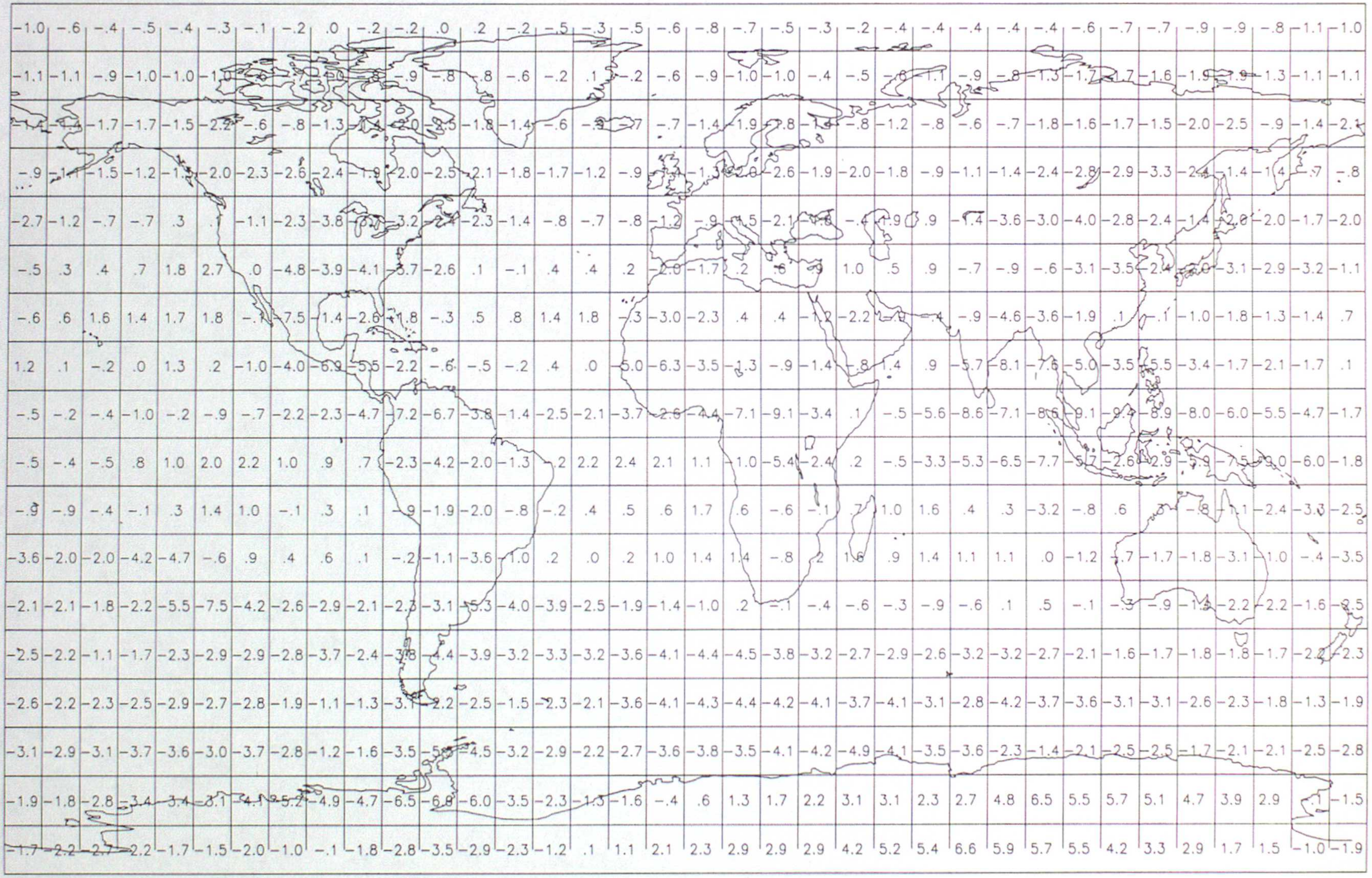
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
JUNE 2000 : HIRS15 channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 29



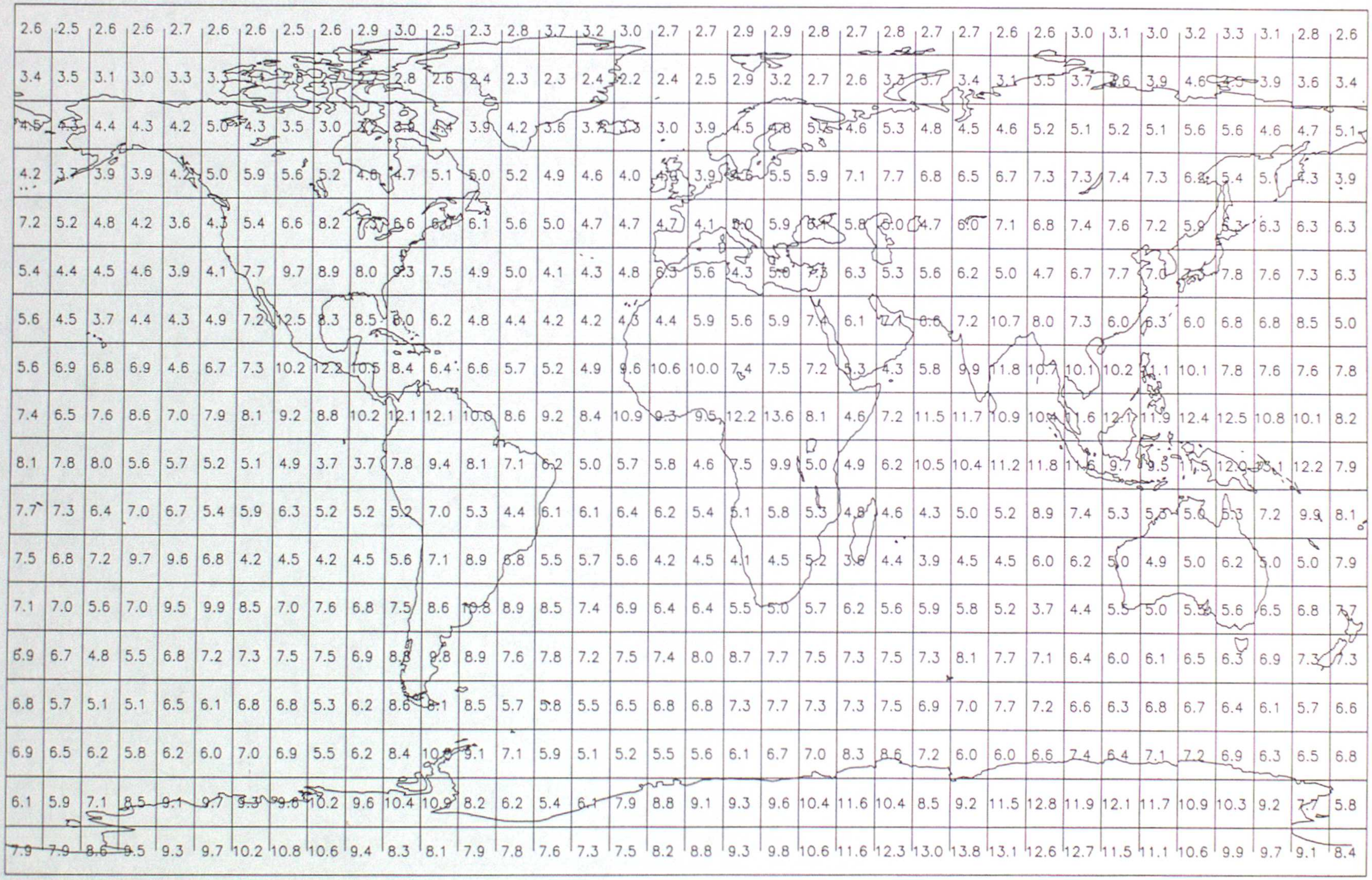
1.9	1.8	1.9	1.9	1.9	1.9	1.8	1.8	1.9	2.1	2.2	1.9	1.6	1.9	2.5	2.2	2.0	1.8	1.7	1.7	1.8	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.1	2.1	2.0	2.2	2.4	2.3	2.1	1.9
2.5	2.4	2.2	2.1	2.1	2.2	[illegible]	2.1	[illegible]	[illegible]	2.1	1.9	1.6	1.7	1.8	1.9	1.5	1.6	1.8	2.4	2.7	2.2	2.2	2.6	3.0	2.8	2.5	2.8	3.0	2.9	3.0	3.4	3.5	2.8	2.7	2.6
3.6	3.6	4.0	4.0	4.0	4.5	3.7	3.1	2.7	2.6	3.2	3.8	3.3	3.5	3.0	3.4	3.0	2.7	3.3	4.0	4.4	4.8	4.0	4.8	4.4	4.2	4.2	4.5	4.6	4.5	4.6	4.9	5.0	4.1	4.0	4.2
3.5	2.8	3.3	3.5	3.8	4.7	5.4	5.3	4.7	4.2	4.6	4.9	4.6	4.6	4.1	4.2	3.6	3.4	4.0	4.5	5.6	5.6	6.4	6.6	6.0	6.0	5.7	6.3	6.6	6.6	7.0	5.8	4.7	4.6	3.6	3.3
6.5	4.8	4.2	4.1	3.3	4.0	5.4	6.5	7.8	7.0	6.5	6.1	5.8	5.2	4.7	4.4	4.3	4.2	4.1	4.9	5.6	5.5	5.8	4.8	4.9	6.1	7.4	7.2	7.6	7.6	7.2	5.6	5.7	5.5	5.4	5.7
5.4	4.4	4.1	4.1	3.6	3.1	7.0	9.6	8.5	8.1	9.1	7.3	5.0	4.9	4.0	3.8	3.5	6.3	5.6	4.4	4.1	5.4	4.9	5.6	5.4	6.1	6.3	5.2	7.1	7.8	6.4	8.6	7.4	7.3	7.1	6.2
5.6	4.8	3.4	4.0	3.3	2.9	5.4	11.2	7.6	7.9	8.0	6.1	4.7	4.4	3.8	3.6	4.5	5.8	6.4	6.1	5.8	6.5	4.8	5.7	6.5	6.7	9.7	7.3	6.4	5.3	5.4	5.6	6.8	6.7	8.0	4.6
5.3	6.4	5.9	6.0	4.5	5.5	6.4	9.4	10.9	9.9	8.2	6.3	6.0	5.1	4.6	4.8	9.0	10.3	9.2	7.8	8.0	7.9	5.8	4.3	5.0	9.4	10.6	10.4	9.1	9.2	9.8	9.1	7.3	7.1	7.1	7.2
6.9	6.3	7.2	7.7	6.6	7.2	7.5	8.5	8.4	9.5	10.7	11.1	9.4	8.3	8.8	8.3	9.8	8.8	9.2	10.6	11.9	8.0	4.7	6.2	10.4	11.0	10.5	10.1	10.9	11.0	10.9	11.3	11.4	10.0	9.7	7.6
7.1	6.9	7.1	5.1	4.9	3.9	3.8	4.7	3.9	4.0	7.8	8.9	7.6	6.6	5.7	4.5	4.3	4.4	4.0	6.4	8.5	4.5	4.1	5.2	9.1	9.8	10.6	11.1	10.6	8.8	8.8	9.9	10.7	11.9	10.7	6.9
7.3	6.3	5.4	5.6	4.9	3.4	3.5	4.1	3.4	3.3	4.3	6.1	4.7	3.3	4.6	4.4	3.9	3.9	3.1	3.3	3.9	3.6	3.6	3.8	3.9	4.7	4.2	7.9	6.7	4.8	4.4	5.1	5.2	6.7	8.8	7.9
7.6	6.2	6.3	8.6	8.8	6.1	3.9	3.7	2.8	2.9	3.4	5.1	8.1	6.4	4.7	4.5	4.4	3.1	2.8	2.3	3.4	4.1	3.2	3.2	2.7	3.3	3.2	4.3	5.4	4.5	4.1	4.8	5.8	4.5	4.2	8.4
6.3	6.0	4.7	6.4	9.0	9.5	7.9	6.3	6.9	6.1	6.5	6.9	9.2	8.1	7.5	6.4	6.0	5.5	5.7	4.4	4.5	4.9	5.3	4.6	4.7	4.7	4.4	3.0	3.8	4.7	4.1	4.8	4.5	5.7	6.1	7.2
6.1	5.8	3.9	4.6	5.7	6.3	6.5	6.8	6.8	5.9	7.8	8.2	7.6	6.6	6.8	6.4	6.7	6.7	7.0	7.6	6.6	6.3	5.9	6.4	6.3	7.1	6.9	6.1	5.4	4.8	4.9	5.4	5.5	5.9	6.8	6.5
6.4	5.3	4.7	4.4	5.4	5.3	5.8	5.9	4.7	5.4	7.7	6.9	7.0	4.7	5.1	4.8	5.9	6.4	6.3	6.3	6.5	5.9	6.1	6.5	6.1	6.6	7.2	6.7	5.9	5.0	5.5	5.5	5.3	5.3	5.3	6.2
7.2	6.8	6.3	5.6	5.9	5.9	6.9	6.9	5.9	6.2	8.0	9.8	7.8	6.6	5.7	5.1	5.3	5.7	5.9	6.0	6.0	6.0	6.9	7.5	6.8	6.0	6.1	6.7	7.0	6.0	6.4	6.5	6.5	6.5	6.8	7.2
7.0	7.0	7.6	8.1	8.3	8.7	8.7	9.0	9.2	8.6	9.2	9.2	7.3	5.8	5.1	5.8	6.8	7.3	7.5	7.8	8.1	8.5	9.0	8.7	7.7	8.1	9.1	9.9	9.5	9.5	9.2	9.2	9.0	8.5	7.8	7.0
7.8	7.7	8.1	8.4	8.1	8.6	8.9	9.1	8.8	8.3	7.6	7.4	7.0	6.9	6.7	6.8	6.9	7.2	7.4	7.8	8.3	8.8	9.4	9.7	10.0	10.5	10.3	10.1	10.4	9.6	9.5	9.4	8.9	8.8	8.3	8.0

ATOVS : MEAN O–B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)   FIGURE 30
JUNE 2000   : HIRS11 Channel (500–700 hPa)
NOAA–15, USING ALL OBSERVATIONS


-1.0 -.6 -.4 -.5 -.4 -.3 -.1 -.2 .0 -.2 -.2 .0 .2 -.2 -.5 -.3 -.5 -.6 -.8 -.7 -.5 -.3 -.2 -.4 -.4 -.4 -.4 -.4 -.6 -.7 -.7 -.9 -.9 -.8 -1.1 -1.0
-1.1 -1.1 -.9 -1.0 -1.0 -1.0 -.6 [illegible] -1.0 -.8 -.9 -.8 .8 -.6 -.2 .1 -.2 -.6 -.9 -1.0 -1.0 -.4 -.5 -.6 -1.1 -.9 -.8 -1.3 -1.7 -1.7 -1.6 -1.9 -1.9 -1.3 -1.1 -1.1
-1.4 -1.4 -1.7 -1.7 -1.5 -2.2 -.6 -.8 -1.3 -1.4 -2.0 -2.5 -1.8 -1.4 -.6 -.3 -.7 -.7 -1.4 -1.9 -1.8 -1.4 -.8 -1.2 -.8 -.6 -.7 -1.8 -1.6 -1.7 -1.5 -2.0 -2.5 -.9 -1.4 -2.1
-.9 -1.1 -1.5 -1.2 -1.3 -2.0 -2.3 -2.6 -2.4 -1.9 -2.0 -2.5 -2.1 -1.8 -1.7 -1.2 -.9 -1.4 -1.3 -2.0 -2.6 -1.9 -2.0 -1.8 -.9 -1.1 -1.4 -2.4 -2.8 -2.9 -3.3 -2.4 -1.4 -1.4 -.7 -.8
-2.7 -1.2 -.7 -.7 .3 .1 -1.1 -2.3 -3.8 [illegible] -3.2 -2.4 -2.3 -1.4 -.8 -.7 -.8 -1.2 -.9 -1.5 -2.1 [illegible] -.4 -1.9 .9 -1.4 -3.6 -3.0 -4.0 -2.8 -2.4 -1.4 -2.0 -2.0 -1.7 -2.0
-.5 .3 .4 .7 1.8 2.7 .0 -4.8 -3.9 -4.1 -3.7 -2.6 .1 -.1 .4 .4 .2 -2.0 -1.7 .2 .6 .9 1.0 .5 .9 -.7 -.9 -.6 -3.1 -3.5 -2.4 -2.0 -3.1 -2.9 -3.2 -1.1
-.6 .6 1.6 1.4 1.7 1.8 -.1 -7.5 -1.4 -2.6 -1.8 -.3 .5 .8 1.4 1.8 -.3 -3.0 -2.3 .4 .4 -1.2 -2.2 [illegible] -.4 -.9 -4.6 -3.6 -1.9 .1 -.1 -1.0 -1.8 -1.3 -1.4 .7
1.2 .1 -.2 .0 1.3 .2 -1.0 -4.0 -6.9 -5.5 -2.2 -.6 -.5 -.2 .4 .0 -5.0 -6.3 -3.5 -1.3 -.9 -1.4 -.8 1.4 .9 -5.7 -8.1 -7.6 -5.0 -3.5 -5.5 -3.4 -1.7 -2.1 -1.7 .1
-.5 -.2 -.4 -1.0 -.2 -.9 -.7 -2.2 -2.3 -4.7 -7.2 -6.7 -3.8 -1.4 -2.5 -2.1 -3.7 -2.6 -4.4 -7.1 -9.1 -3.4 .1 -.5 -5.6 -8.6 -7.1 -8.6 -9.1 -9.4 -8.9 -8.0 -6.0 -5.5 -4.7 -1.7
-.5 -.4 -.5 .8 1.0 2.0 2.2 1.0 .9 .7 -2.3 -4.2 -2.0 -1.3 .2 2.2 2.4 2.1 1.1 -1.0 -5.4 -2.4 .2 -.5 -3.3 -5.3 -6.5 -7.7 -5.7 -2.6 -2.9 -5.9 -7.5 -9.0 -6.0 -1.8
-.9 -.9 -.4 -.1 .3 1.4 1.0 -.1 .3 .1 -.9 -1.9 -2.0 -.8 -.2 .4 .5 .6 1.7 .6 -.6 -.1 .7 1.0 1.6 .4 .3 -3.2 -.8 .6 .3 -.8 -1.1 -2.4 -3.3 -2.5
-3.6 -2.0 -2.0 -4.2 -4.7 -.6 .9 .4 .6 .1 -.2 -1.1 -3.6 -1.0 .2 .0 .2 1.0 1.4 1.4 -.8 .2 1.6 .9 1.4 1.1 1.1 .0 -1.2 -.7 -1.7 -1.8 -3.1 -1.0 -.4 -3.5
-2.1 -2.1 -1.8 -2.2 -5.5 -7.5 -4.2 -2.6 -2.9 -2.1 -2.3 -3.1 -5.3 -4.0 -3.9 -2.5 -1.9 -1.4 -1.0 .2 -.1 -.4 -.6 -.3 -.9 -.6 .1 .5 -.1 -.3 -.9 -1.3 -2.2 -2.2 -1.6 -2.5
-2.5 -2.2 -1.1 -1.7 -2.3 -2.9 -2.9 -2.8 -3.7 -2.4 -3.8 -4.4 -3.9 -3.2 -3.3 -3.2 -3.6 -4.1 -4.4 -4.5 -3.8 -3.2 -2.7 -2.9 -2.6 -3.2 -3.2 -2.7 -2.1 -1.6 -1.7 -1.8 -1.8 -1.7 -2.2 -2.3
-2.6 -2.2 -2.3 -2.5 -2.9 -2.7 -2.8 -1.9 -1.1 -1.3 -3.1 -2.2 -2.5 -1.5 -2.3 -2.1 -3.6 -4.1 -4.3 -4.4 -4.2 -4.1 -3.7 -4.1 -3.1 -2.8 -4.2 -3.7 -3.6 -3.1 -3.1 -2.6 -2.3 -1.8 -1.3 -1.9
-3.1 -2.9 -3.1 -3.7 -3.6 -3.0 -3.7 -2.8 -1.2 -1.6 -3.5 -5.5 -4.5 -3.2 -2.9 -2.2 -2.7 -3.6 -3.8 -3.5 -4.1 -4.2 -4.9 -4.1 -3.5 -3.6 -2.3 -1.4 -2.1 -2.5 -2.5 -1.7 -2.1 -2.1 -2.5 -2.8
-1.9 -1.8 -2.8 -3.4 -3.4 -3.1 -4.1 -5.2 -4.9 -4.7 -6.5 -6.8 -6.0 -3.5 -2.3 -1.3 -1.6 -.4 .6 1.3 1.7 2.2 3.1 3.1 2.3 2.7 4.8 6.5 5.5 5.7 5.1 4.7 3.9 2.9 -.1 -1.5
-1.7 -2.2 -2.7 -2.2 -1.7 -1.5 -2.0 -1.0 -.1 -1.8 -2.8 -3.5 -2.9 -2.3 -1.2 .1 1.1 2.1 2.3 2.9 2.9 2.9 4.2 5.2 5.4 6.6 5.9 5.7 5.5 4.2 3.3 2.9 1.7 1.5 -1.0 -1.9

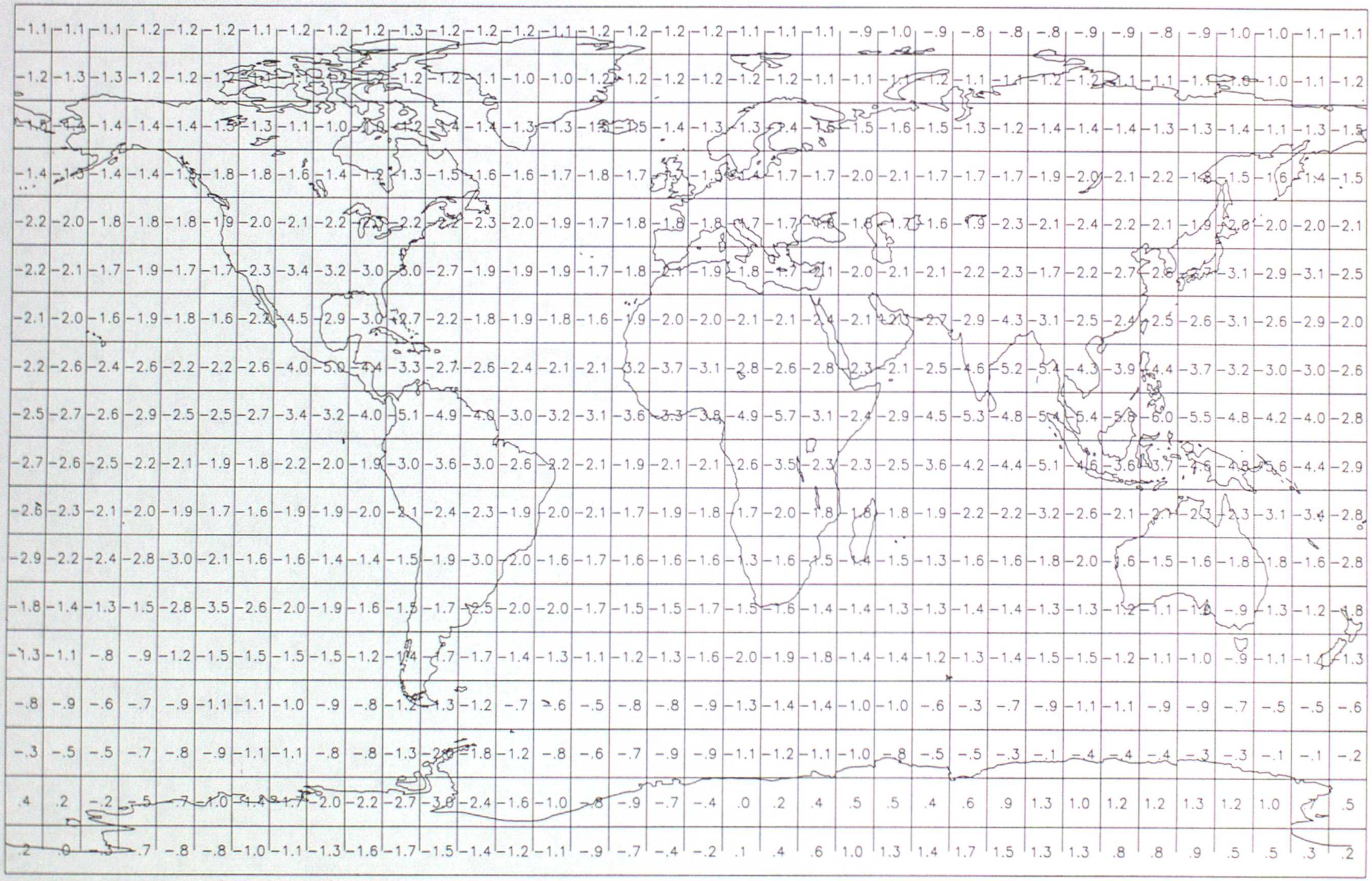
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
JUNE 2000 : HIRS11 channel (500-700 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 31



2.6	2.5	2.6	2.6	2.7	2.6	2.6	2.5	2.6	2.9	3.0	2.5	2.3	2.8	3.7	3.2	3.0	2.7	2.7	2.9	2.9	2.8	2.7	2.8	2.7	2.7	2.6	2.6	3.0	3.1	3.0	3.2	3.3	3.1	2.8	2.6
3.4	3.5	3.1	3.0	3.3	3.3	3.4	2.8	[illegible]	2.7	2.8	2.6	2.4	2.3	2.3	2.4	2.2	2.4	2.5	2.9	3.2	2.7	2.6	3.3	3.7	3.4	3.1	3.5	3.7	2.6	3.9	4.6	4.5	3.9	3.6	3.4
4.5	4.3	4.4	4.3	4.2	5.0	4.3	3.5	3.0	3.2	3.8	4.4	3.9	4.2	3.6	3.7	3.3	3.0	3.9	4.5	4.8	5.5	4.6	5.3	4.8	4.5	4.6	5.2	5.1	5.2	5.1	5.6	5.6	4.6	4.7	5.1
4.2	3.7	3.9	3.9	4.2	5.0	5.9	5.6	5.2	4.6	4.7	5.1	5.0	5.2	4.9	4.6	4.0	4.9	3.9	4.6	5.5	5.9	7.1	7.7	6.8	6.5	6.7	7.3	7.3	7.4	7.3	6.2	5.4	5.1	4.3	3.9
7.2	5.2	4.8	4.2	3.6	4.3	5.4	6.6	8.2	7.5	6.6	6.0	6.1	5.6	5.0	4.7	4.7	4.7	4.1	5.0	5.9	6.1	5.8	6.0	4.7	6.0	7.1	6.8	7.4	7.6	7.2	5.9	5.3	6.3	6.3	6.3
5.4	4.4	4.5	4.6	3.9	4.1	7.7	9.7	8.9	8.0	9.3	7.5	4.9	5.0	4.1	4.3	4.8	6.3	5.6	4.3	5.0	7.3	6.3	5.3	5.6	6.2	5.0	4.7	6.7	7.7	7.0	[illegible]	7.8	7.6	7.3	6.3
5.6	4.5	3.7	4.4	4.3	4.9	7.2	12.5	8.3	8.5	8.0	6.2	4.8	4.4	4.2	4.2	4.3	4.4	5.9	5.6	5.9	7.4	6.1	7.1	6.6	7.2	10.7	8.0	7.3	6.0	6.3	6.0	6.8	6.8	8.5	5.0
5.6	6.9	6.8	6.9	4.6	6.7	7.3	10.2	12.2	10.5	8.4	6.4	6.6	5.7	5.2	4.9	9.6	10.6	10.0	7.4	7.5	7.2	5.3	4.3	5.8	9.9	11.8	10.7	10.1	10.2	11.1	10.1	7.8	7.6	7.6	7.8
7.4	6.5	7.6	8.6	7.0	7.9	8.1	9.2	8.8	10.2	12.1	12.1	10.0	8.6	9.2	8.4	10.9	9.3	9.5	12.2	13.6	8.1	4.6	7.2	11.5	11.7	10.9	10.4	11.6	12.1	11.9	12.4	12.5	10.8	10.1	8.2
8.1	7.8	8.0	5.6	5.7	5.2	5.1	4.9	3.7	3.7	7.8	9.4	8.1	7.1	6.2	5.0	5.7	5.8	4.6	7.5	9.9	5.0	4.9	6.2	10.5	10.4	11.2	11.8	11.6	9.7	9.5	11.5	12.0	13.1	12.2	7.9
7.7	7.3	6.4	7.0	6.7	5.4	5.9	6.3	5.2	5.2	5.2	7.0	5.3	4.4	6.1	6.1	6.4	6.2	5.4	5.1	5.8	5.3	4.8	4.6	4.3	5.0	5.2	8.9	7.4	5.3	5.3	5.6	5.3	7.2	9.9	8.1
7.5	6.8	7.2	9.7	9.6	6.8	4.2	4.5	4.2	4.5	5.6	7.1	8.9	6.8	5.5	5.7	5.6	4.2	4.5	4.1	4.5	5.2	3.6	4.4	3.9	4.5	4.5	6.0	6.2	5.0	4.9	5.0	6.2	5.0	5.0	7.9
7.1	7.0	5.6	7.0	9.5	9.9	8.5	7.0	7.6	6.8	7.5	8.6	10.8	8.9	8.5	7.4	6.9	6.4	6.4	5.5	5.0	5.7	6.2	5.6	5.9	5.8	5.2	3.7	4.4	5.5	5.0	5.5	5.6	6.5	6.8	7.7
6.9	6.7	4.8	5.5	6.8	7.2	7.3	7.5	7.5	6.9	8.8	9.8	8.9	7.6	7.8	7.2	7.5	7.4	8.0	8.7	7.7	7.5	7.3	7.5	7.3	8.1	7.7	7.1	6.4	6.0	6.1	6.5	6.3	6.9	7.3	7.3
6.8	5.7	5.1	5.1	6.5	6.1	6.8	6.8	5.3	6.2	8.6	8.1	8.5	5.7	5.8	5.5	6.5	6.8	6.8	7.3	7.7	7.3	7.3	7.5	6.9	7.0	7.7	7.2	6.6	6.3	6.8	6.7	6.4	6.1	5.7	6.6
6.9	6.5	6.2	5.8	6.2	6.0	7.0	6.9	5.5	6.2	8.4	10.8	9.1	7.1	5.9	5.1	5.2	5.5	5.6	6.1	6.7	7.0	8.3	8.6	7.2	6.0	6.0	6.6	7.4	6.4	7.1	7.2	6.9	6.3	6.5	6.8
6.1	5.9	7.1	8.5	9.1	9.7	9.3	9.6	10.2	9.6	10.4	10.9	8.2	6.2	5.4	6.1	7.9	8.8	9.1	9.3	9.6	10.4	11.6	10.4	8.5	9.2	11.5	12.8	11.9	12.1	11.7	10.9	10.3	9.2	7.7	5.8
7.9	7.9	8.6	9.5	9.3	9.7	10.2	10.8	10.6	9.4	8.3	8.1	7.9	7.8	7.6	7.3	7.5	8.2	8.8	9.3	9.8	10.6	11.6	12.3	13.0	13.8	13.1	12.6	12.7	11.5	11.1	10.6	9.9	9.7	9.1	8.4

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)   FIGURE 32
JUNE 2000   : HIRS4 channel (400 hPa)
NOAA-15, USING ALL OBSERVATIONS

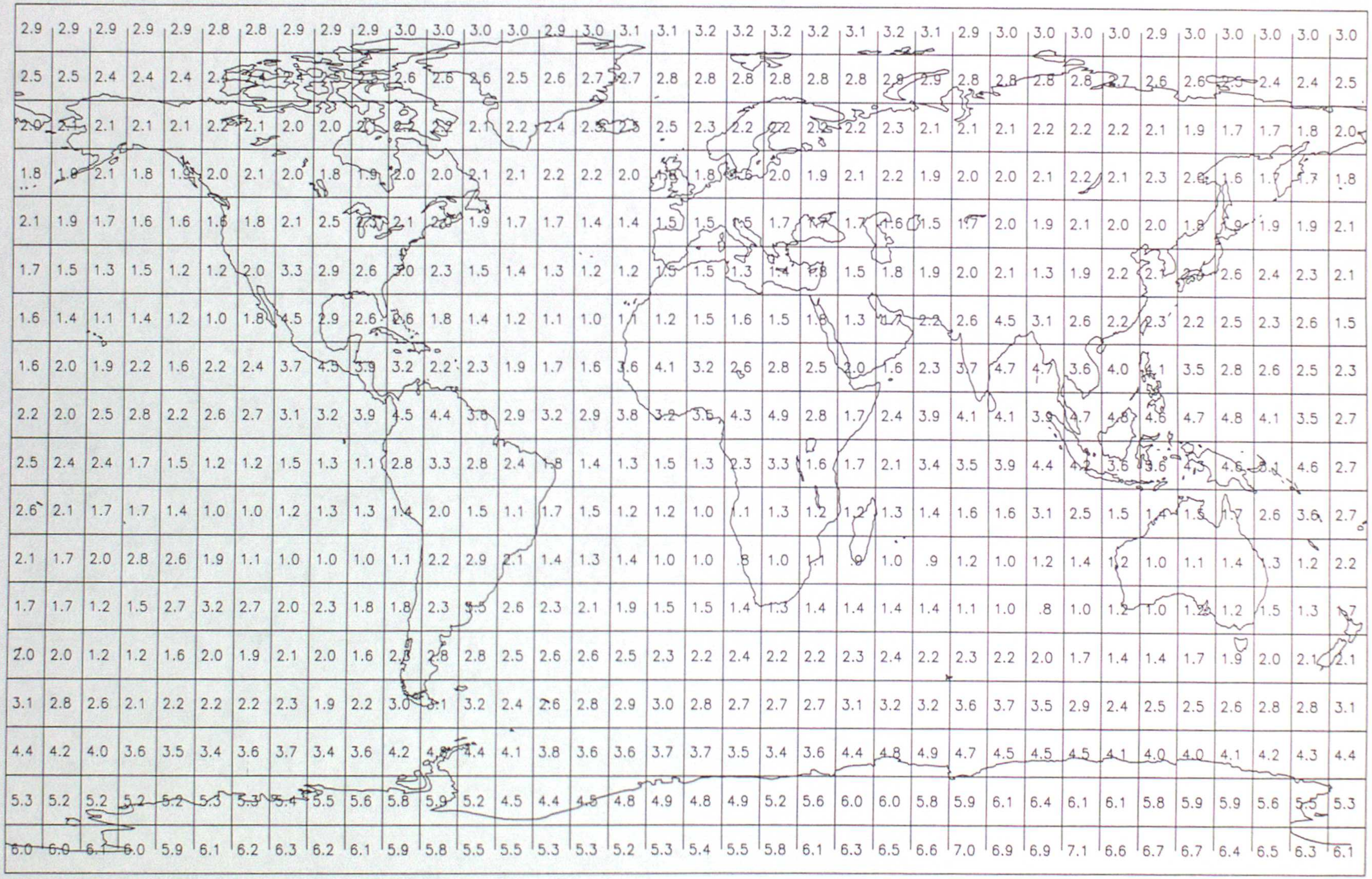

-1.1 -1.1 -1.1 -1.2 -1.2 -1.2 -1.1 -1.2 -1.2 -1.2 -1.3 -1.2 -1.2 -1.2 -1.1 -1.2 -1.2 -1.2 -1.2 -1.1 -1.1 -1.1 -.9 -1.0 -.9 -.8 -.8 -.8 -.9 -.9 -.8 -.9 -1.0 -1.0 -1.1 -1.1
-1.2 -1.3 -1.3 -1.2 -1.2 -1.2 -1.1 -1.1 -1.2 -1.2 -1.2 -1.2 -1.1 -1.0 -1.0 -1.2 -1.2 -1.2 -1.2 -1.2 -1.2 -1.1 -1.1 -1.1 -1.2 -1.1 -1.1 -1.2 -1.2 -1.1 -1.1 -1.1 -1.0 -1.0 -1.1 -1.2
-1.5 -1.4 -1.4 -1.4 -1.4 -1.5 -1.3 -1.1 -1.0 -1.0 -1.2 -1.4 -1.4 -1.3 -1.3 -1.3 -1.5 -1.4 -1.3 -1.3 -1.4 -1.5 -1.5 -1.6 -1.5 -1.3 -1.2 -1.4 -1.4 -1.4 -1.3 -1.3 -1.4 -1.1 -1.3 -1.5
-1.4 -1.3 -1.4 -1.4 -1.5 -1.8 -1.8 -1.6 -1.4 -1.2 -1.3 -1.5 -1.6 -1.6 -1.7 -1.8 -1.7 -1.7 -1.5 -1.4 -1.7 -1.7 -2.0 -2.1 -1.7 -1.7 -1.7 -1.9 -2.0 -2.1 -2.2 -1.8 -1.5 -1.6 -1.4 -1.5
-2.2 -2.0 -1.8 -1.8 -1.8 -1.9 -2.0 -2.1 -2.2 -2.2 -2.2 -2.2 -2.3 -2.0 -1.9 -1.7 -1.8 -1.8 -1.8 -1.7 -1.7 -1.6 -1.6 -1.7 -1.6 -1.9 -2.3 -2.1 -2.4 -2.2 -2.1 -1.9 -2.0 -2.0 -2.0 -2.1
-2.2 -2.1 -1.7 -1.9 -1.7 -1.7 -2.3 -3.4 -3.2 -3.0 -3.0 -2.7 -1.9 -1.9 -1.9 -1.7 -1.8 -2.1 -1.9 -1.8 -1.7 -2.1 -2.0 -2.1 -2.1 -2.2 -2.3 -1.7 -2.2 -2.7 -2.6 -2.7 -3.1 -2.9 -3.1 -2.5
-2.1 -2.0 -1.6 -1.9 -1.8 -1.6 -2.2 -4.5 -2.9 -3.0 -2.7 -2.2 -1.8 -1.9 -1.8 -1.6 -1.9 -2.0 -2.0 -2.1 -2.1 -2.4 -2.1 -2.3 -2.7 -2.9 -4.3 -3.1 -2.5 -2.4 -2.5 -2.6 -3.1 -2.6 -2.9 -2.0
-2.2 -2.6 -2.4 -2.6 -2.2 -2.2 -2.6 -4.0 -5.0 -4.4 -3.3 -2.7 -2.6 -2.4 -2.1 -2.1 -3.2 -3.7 -3.1 -2.8 -2.6 -2.8 -2.3 -2.1 -2.5 -4.6 -5.2 -5.4 -4.3 -3.9 -4.4 -3.7 -3.2 -3.0 -3.0 -2.6
-2.5 -2.7 -2.6 -2.9 -2.5 -2.5 -2.7 -3.4 -3.2 -4.0 -5.1 -4.9 -4.0 -3.0 -3.2 -3.1 -3.6 -3.3 -3.8 -4.9 -5.7 -3.1 -2.4 -2.9 -4.5 -5.3 -4.8 -5.4 -5.4 -5.8 -6.0 -5.5 -4.8 -4.2 -4.0 -2.8
-2.7 -2.6 -2.5 -2.2 -2.1 -1.9 -1.8 -2.2 -2.0 -1.9 -3.0 -3.6 -3.0 -2.6 -2.2 -2.1 -1.9 -2.1 -2.1 -2.6 -3.5 -2.3 -2.3 -2.5 -3.6 -4.2 -4.4 -5.1 -4.6 -3.6 -3.7 -4.6 -4.8 -5.6 -4.4 -2.9
-2.6 -2.3 -2.1 -2.0 -1.9 -1.7 -1.6 -1.9 -1.9 -2.0 -2.1 -2.4 -2.3 -1.9 -2.0 -2.1 -1.7 -1.9 -1.8 -1.7 -2.0 -1.8 -1.8 -1.8 -1.9 -2.2 -2.2 -3.2 -2.6 -2.1 -2.1 -2.3 -2.3 -3.1 -3.4 -2.8
-2.9 -2.2 -2.4 -2.8 -3.0 -2.1 -1.6 -1.6 -1.4 -1.4 -1.5 -1.9 -3.0 -2.0 -1.6 -1.7 -1.6 -1.6 -1.6 -1.3 -1.6 -1.5 -1.4 -1.5 -1.3 -1.6 -1.6 -1.8 -2.0 -1.6 -1.5 -1.6 -1.8 -1.8 -1.6 -2.8
-1.8 -1.4 -1.3 -1.5 -2.8 -3.5 -2.6 -2.0 -1.9 -1.6 -1.5 -1.7 -2.5 -2.0 -2.0 -1.7 -1.5 -1.5 -1.7 -1.5 -1.6 -1.4 -1.4 -1.3 -1.3 -1.4 -1.4 -1.3 -1.3 -1.2 -1.1 -1.0 -.9 -1.3 -1.2 -1.8
-1.3 -1.1 -.8 -.9 -1.2 -1.5 -1.5 -1.5 -1.5 -1.2 -1.4 -1.7 -1.7 -1.4 -1.3 -1.1 -1.2 -1.3 -1.6 -2.0 -1.9 -1.8 -1.4 -1.4 -1.2 -1.3 -1.4 -1.5 -1.5 -1.2 -1.1 -1.0 -.9 -1.1 -1.4 -1.3
-.8 -.9 -.6 -.7 -.9 -1.1 -1.1 -1.0 -.9 -.8 -1.2 -1.3 -1.2 -.7 -.6 -.5 -.8 -.8 -.9 -1.3 -1.4 -1.4 -1.0 -1.0 -.6 -.3 -.7 -.9 -1.1 -1.1 -.9 -.9 -.7 -.5 -.5 -.6
-.3 -.5 -.5 -.7 -.8 -.9 -1.1 -1.1 -.8 -.8 -1.3 -2.0 -1.8 -1.2 -.8 -.6 -.7 -.9 -.9 -1.1 -1.2 -1.1 -1.0 -.8 -.5 -.5 -.3 -.1 -.4 -.4 -.4 -.3 -.3 -.1 -.1 -.2
.4 .2 -.2 -.5 -.7 -1.0 -1.4 -1.7 -2.0 -2.2 -2.7 -3.0 -2.4 -1.6 -1.0 -.8 -.9 -.7 -.4 .0 .2 .4 .5 .5 .4 .6 .9 1.3 1.0 1.2 1.2 1.3 1.2 1.0 .7 .5
.2 .0 -.3 -.7 -.8 -.8 -1.0 -1.1 -1.3 -1.6 -1.7 -1.5 -1.4 -1.2 -1.1 -.9 -.7 -.4 -.2 .1 .4 .6 1.0 1.3 1.4 1.7 1.5 1.3 1.3 .8 .8 .9 .5 .5 .3 .2

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)

JUNE 2000 : HIRS4 channel (400 hPa)

NOAA-15, USING ALL OBSERVATIONS

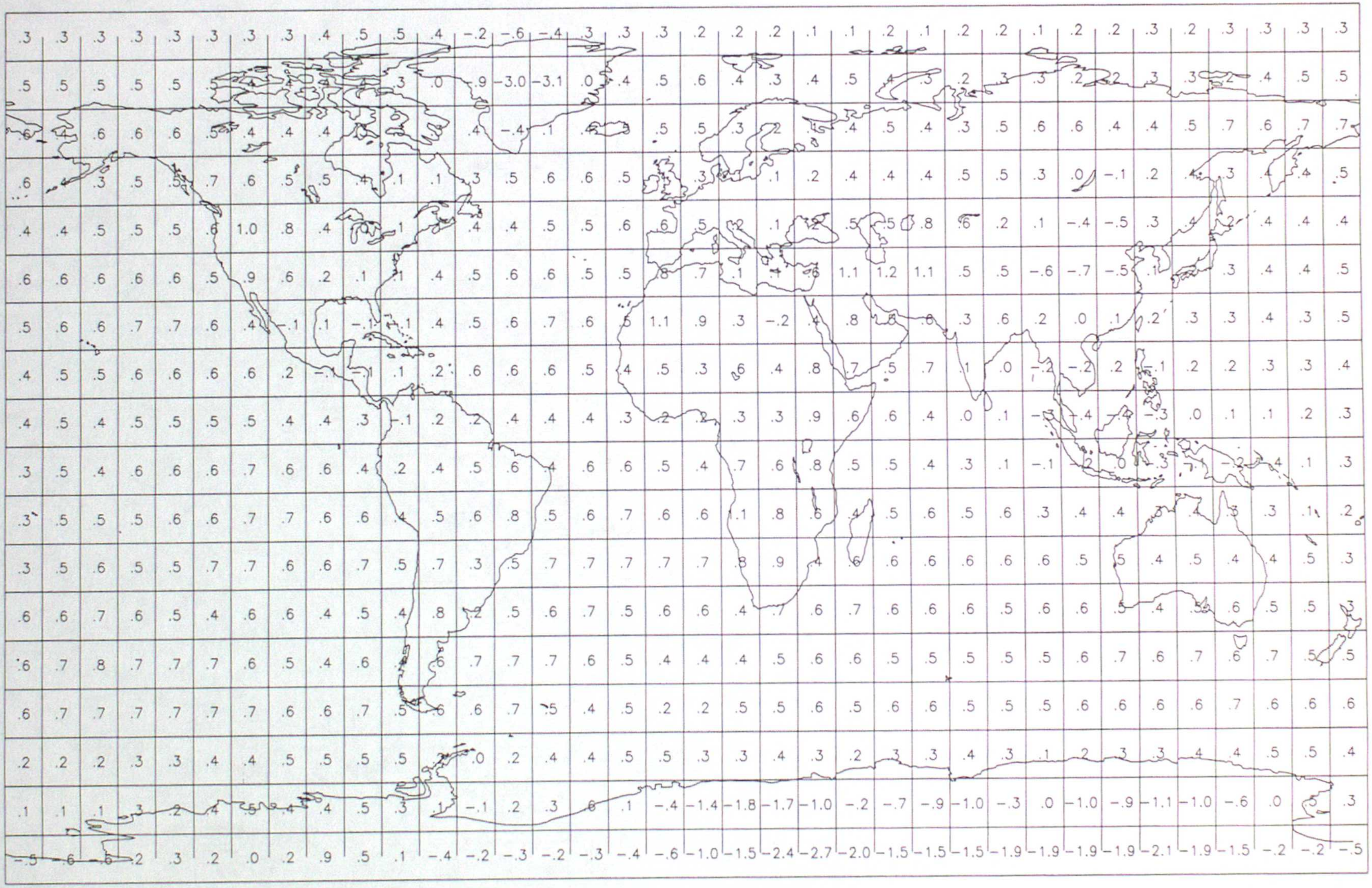
FIGURE 33



2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.0	3.0	2.9	3.0	3.1	3.1	3.2	3.2	3.2	3.2	3.1	3.2	3.1	2.9	3.0	3.0	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0
2.5	2.5	2.4	2.4	2.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.6	2.6	2.6	2.5	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.8	2.8	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.4	2.5
2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.0	2.0	[illegible]	2.2	2.2	2.1	2.2	2.4	2.5	2.5	2.5	2.3	2.2	2.2	2.2	2.2	2.3	2.1	2.1	2.1	2.2	2.2	2.2	2.1	1.9	1.7	1.7	1.8	2.0
1.8	1.8	2.1	1.8	1.9	2.0	2.1	2.0	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.0	1.8	1.8	1.6	2.0	1.9	2.1	2.2	1.9	2.0	2.0	2.1	2.2	2.1	2.3	2.6	1.6	1.7	1.7	1.8
2.1	1.9	1.7	1.6	1.6	1.6	1.8	2.1	2.5	2.5	2.1	2.0	1.9	1.7	1.7	1.4	1.4	1.5	1.5	1.5	1.7	1.7	1.7	1.6	1.5	1.7	2.0	1.9	2.1	2.0	2.0	1.8	1.9	1.9	1.9	2.1
1.7	1.5	1.3	1.5	1.2	1.2	2.0	3.3	2.9	2.6	3.0	2.3	1.5	1.4	1.3	1.2	1.2	1.5	1.5	1.3	1.4	1.8	1.5	1.8	1.9	2.0	2.1	1.3	1.9	2.2	2.1	[illegible]	2.6	2.4	2.3	2.1
1.6	1.4	1.1	1.4	1.2	1.0	1.8	4.5	2.9	2.6	2.6	1.8	1.4	1.2	1.1	1.0	1.1	1.2	1.5	1.6	1.5	1.8	1.3	1.7	2.2	2.6	4.5	3.1	2.6	2.2	2.3	2.2	2.5	2.3	2.6	1.5
1.6	2.0	1.9	2.2	1.6	2.2	2.4	3.7	4.5	3.9	3.2	2.2	2.3	1.9	1.7	1.6	3.6	4.1	3.2	2.6	2.8	2.5	2.0	1.6	2.3	3.7	4.7	4.7	3.6	4.0	4.1	3.5	2.8	2.6	2.5	2.3
2.2	2.0	2.5	2.8	2.2	2.6	2.7	3.1	3.2	3.9	4.5	4.4	3.8	2.9	3.2	2.9	3.8	3.2	3.5	4.3	4.9	2.8	1.7	2.4	3.9	4.1	4.1	3.9	4.7	4.8	4.6	4.7	4.8	4.1	3.5	2.7
2.5	2.4	2.4	1.7	1.5	1.2	1.2	1.5	1.3	1.1	2.8	3.3	2.8	2.4	1.8	1.4	1.3	1.5	1.3	2.3	3.3	1.6	1.7	2.1	3.4	3.5	3.9	4.4	4.2	3.6	3.6	4.3	4.6	3.1	4.6	2.7
2.6	2.1	1.7	1.7	1.4	1.0	1.0	1.2	1.3	1.3	1.4	2.0	1.5	1.1	1.7	1.5	1.2	1.2	1.0	1.1	1.3	1.2	1.2	1.3	1.4	1.6	1.6	3.1	2.5	1.5	1.4	1.5	1.7	2.6	3.6	2.7
2.1	1.7	2.0	2.8	2.6	1.9	1.1	1.0	1.0	1.0	1.1	2.2	2.9	2.1	1.4	1.3	1.4	1.0	1.0	.8	1.0	1.1	.9	1.0	.9	1.2	1.0	1.2	1.4	1.2	1.0	1.1	1.4	1.3	1.2	2.2
1.7	1.7	1.2	1.5	2.7	3.2	2.7	2.0	2.3	1.8	1.8	2.3	3.5	2.6	2.3	2.1	1.9	1.5	1.5	1.4	1.3	1.4	1.4	1.4	1.4	1.1	1.0	.8	1.0	1.2	1.0	1.2	1.2	1.5	1.3	1.7
2.0	2.0	1.2	1.2	1.6	2.0	1.9	2.1	2.0	1.6	2.3	2.8	2.8	2.5	2.6	2.6	2.5	2.3	2.2	2.4	2.2	2.2	2.3	2.4	2.2	2.3	2.2	2.0	1.7	1.4	1.4	1.7	1.9	2.0	2.1	2.1
3.1	2.8	2.6	2.1	2.2	2.2	2.2	2.3	1.9	2.2	3.0	3.1	3.2	2.4	2.6	2.8	2.9	3.0	2.8	2.7	2.7	2.7	3.1	3.2	3.2	3.6	3.7	3.5	2.9	2.4	2.5	2.5	2.6	2.8	2.8	3.1
4.4	4.2	4.0	3.6	3.5	3.4	3.6	3.7	3.4	3.6	4.2	4.8	4.4	4.1	3.8	3.6	3.6	3.7	3.7	3.5	3.4	3.6	4.4	4.8	4.9	4.7	4.5	4.5	4.5	4.1	4.0	4.0	4.1	4.2	4.3	4.4
5.3	5.2	5.2	5.2	5.2	5.3	5.3	5.4	5.5	5.6	5.8	5.9	5.2	4.5	4.4	4.5	4.8	4.9	4.8	4.9	5.2	5.6	6.0	6.0	5.8	5.9	6.1	6.4	6.1	6.1	5.8	5.9	5.9	5.6	5.5	5.3
6.0	6.0	6.1	6.0	5.9	6.1	6.2	6.3	6.2	6.1	5.9	5.8	5.5	5.5	5.3	5.3	5.2	5.3	5.4	5.5	5.8	6.1	6.3	6.5	6.6	7.0	6.9	6.9	7.1	6.6	6.7	6.7	6.4	6.5	6.3	6.1

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
JUNE 2000 : AMSUA−5 Channel (700 hPa)
NOAA−15, USING ALL OBSERVATIONS

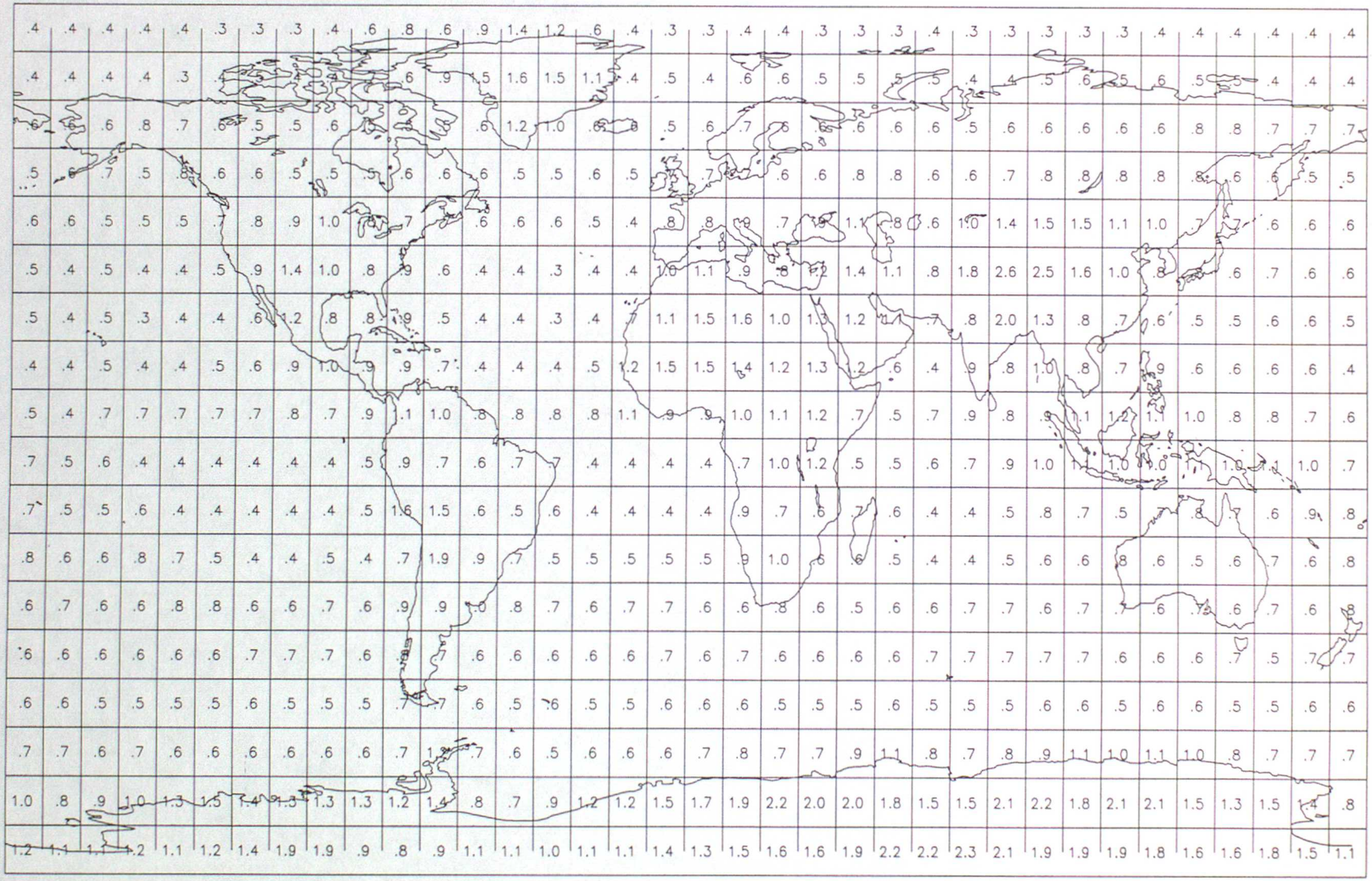
FIGURE 34



.3	.3	.3	.3	.3	.3	.3	.3	.4	.5	.5	.4	−.2	−.6	−.4	.3	.3	.3	.2	.2	.2	.1	.1	.2	.1	.2	.2	.1	.2	.2	.3	.2	.3	.3	.3	.3
.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.3	.0	.9	−3.0	−3.1	.0	.4	.5	.6	.4	.3	.4	.5	.4	.3	.2	.3	.3	.2	.2	.3	.3	.2	.4	.5	.5
.6	.4	.6	.6	.6	.5	.4	.4	.4	[illegible]	.3	.3	.4	−.4	.1	.4	.3	.5	.5	.3	.2	.1	.4	.5	.4	.3	.5	.6	.6	.4	.4	.5	.7	.6	.7	.7
.6	.4	.3	.5	.5	.7	.6	.5	.5	.4	.1	.1	.3	.5	.6	.6	.5	[illegible]	.3	.1	.1	.2	.4	.4	.4	.5	.5	.3	.0	−.1	.2	.4	.3	.4	.4	.5
.4	.4	.5	.5	.5	.6	1.0	.8	.4	.0	.1	[illegible]	.4	.4	.5	.5	.6	.6	.5	.2	.1	.2	.5	.5	.8	.6	.2	.1	−.4	−.5	.3	.4	.2	.4	.4	.4
.6	.6	.6	.6	.6	.5	.9	.6	.2	.1	.1	.4	.5	.6	.6	.5	.5	.8	.7	.1	.1	.6	1.1	1.2	1.1	.5	.5	−.6	−.7	−.5	.1	[illegible]	.3	.4	.4	.5
.5	.6	.6	.7	.7	.6	.4	−.1	.1	−.1	.1	.4	.5	.6	.7	.6	.5	1.1	.9	.3	−.2	.4	.8	.8	.6	.3	.6	.2	.0	.1	.2	.3	.3	.4	.3	.5
.4	.5	.5	.6	.6	.6	.6	.2	−.1	−.1	.1	.2	.6	.6	.6	.5	.4	.5	.3	.6	.4	.8	.7	.5	.7	.1	.0	−.2	−.2	.2	−.1	.2	.2	.3	.3	.4
.4	.5	.4	.5	.5	.5	.5	.4	.4	.3	−.1	.2	.2	.4	.4	.4	.3	.2	.2	.3	.3	.9	.6	.6	.4	.0	.1	−.3	−.4	−.4	−.3	.0	.1	.1	.2	.3
.3	.5	.4	.6	.6	.6	.7	.6	.6	.4	.2	.4	.5	.6	.4	.6	.6	.5	.4	.7	.6	.8	.5	.5	.4	.3	.1	−.1	−.2	.0	−.3	.1	−.2	.4	.1	.3
.3	.5	.5	.5	.6	.6	.7	.7	.6	.6	.4	.5	.6	.8	.5	.6	.7	.6	.6	1.1	.8	.6	.4	.5	.6	.5	.6	.3	.4	.4	.3	.4	.3	.3	.1	.2
.3	.5	.6	.5	.5	.7	.7	.6	.6	.7	.5	.7	.3	.5	.7	.7	.7	.7	.7	.8	.9	.4	.6	.6	.6	.6	.6	.6	.5	.5	.4	.5	.4	.4	.5	.3
.6	.6	.7	.6	.5	.4	.6	.6	.4	.5	.4	.8	.2	.5	.6	.7	.5	.6	.6	.4	.7	.6	.7	.6	.6	.6	.5	.6	.6	.5	.4	.5	.6	.5	.5	.3
.6	.7	.8	.7	.7	.7	.6	.5	.4	.6	.4	.6	.7	.7	.7	.6	.5	.4	.4	.4	.5	.6	.6	.5	.5	.5	.5	.5	.6	.7	.6	.7	.6	.7	.5	.5
.6	.7	.7	.7	.7	.7	.7	.6	.6	.7	.5	.6	.6	.7	.5	.4	.5	.2	.2	.5	.5	.6	.5	.6	.6	.5	.5	.5	.6	.6	.6	.6	.7	.6	.6	.6
.2	.2	.2	.3	.3	.4	.4	.5	.5	.5	.5	.3	.0	.2	.4	.4	.5	.5	.3	.3	.4	.3	.2	.3	.3	.4	.3	.1	.2	.3	.3	.4	.4	.5	.5	.4
.1	.1	.1	.3	.2	.4	.5	.4	.4	.5	.3	.1	−.1	.2	.3	.6	.1	−.4	−1.4	−1.8	−1.7	−1.0	−.2	−.7	−.9	−1.0	−.3	.0	−1.0	−.9	−1.1	−1.0	−.6	.0	.5	.3
−.5	−.6	−.6	.2	.3	.2	.0	.2	.9	.5	.1	−.4	−.2	−.3	−.2	−.3	−.4	−.6	−1.0	−1.5	−2.4	−2.7	−2.0	−1.5	−1.5	−1.5	−1.9	−1.9	−1.9	−1.9	−2.1	−1.9	−1.5	−.2	−.2	−.5

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
JUNE 2000 : AMSUA-5 channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

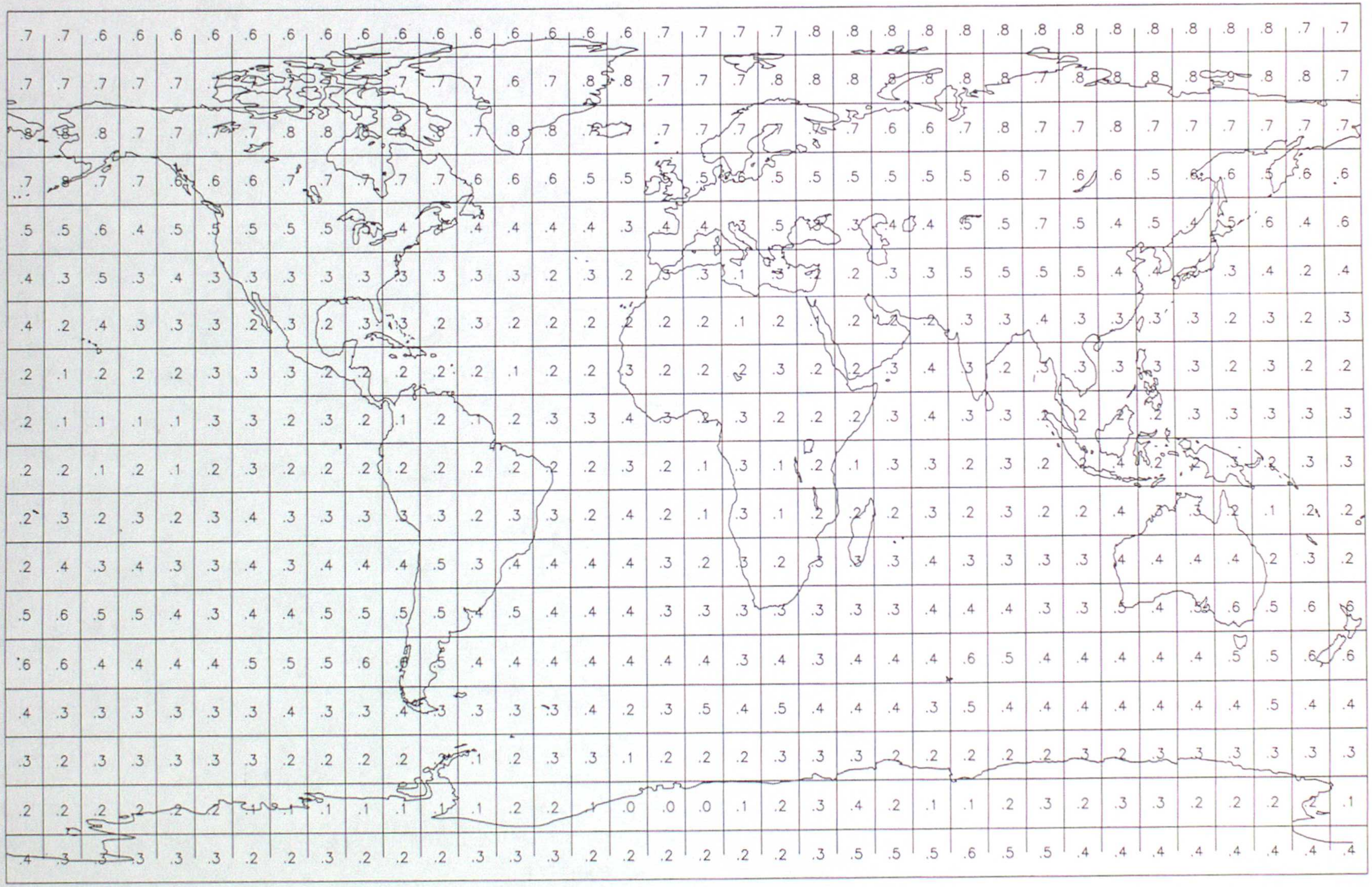
FIGURE 35



.4	.4	.4	.4	.4	.3	.3	.3	.4	.6	.8	.6	.9	1.4	1.2	.6	.4	.3	.3	.4	.4	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.3	.4	.5	.4	.4		.6	.9	1.5	1.6	1.5	1.1	.4	.5	.4	.6	.6	.5	.5	.5	.5	.4	.4	.5	.6	.5	.6	.5	.5	.4	.4	.4
.6	.6	.6	.8	.7	.6	.5	.5	.6	.6	[illegible]	[illegible]	.6	1.2	1.0	.6	.6	.5	.6	.7	.6	.6	.6	.6	.6	.5	.6	.6	.6	.6	.6	.8	.8	.7	.7	.7
.5	.6	.7	.5	.8	.6	.6	.5	.5	.5	.6	.6	.6	.5	.5	.6	.5		.7		.6	.6	.8	.8	.6	.6	.7	.8	.8	.8	.8	.8	.6	.6	.5	.5
.6	.6	.5	.5	.5	.7	.8	.9	1.0	.8	.7		.6	.6	.6	.5	.4	.8	.8	.9	.7	.9	1.1	.8	.6	1.0	1.4	1.5	1.5	1.1	1.0	.7	.7	.6	.6	.6
.5	.4	.5	.4	.4	.5	.9	1.4	1.0	.8	.9	.6	.4	.4	.3	.4	.4	1.0	1.1	.9	.8	1.2	1.4	1.1	.8	1.8	2.6	2.5	1.6	1.0	.8		.6	.7	.6	.6
.5	.4	.5	.3	.4	.4	.6	1.2	.8	.8	.9	.5	.4	.4	.3	.4	.7	1.1	1.5	1.6	1.0	1.3	1.2	1.1	.7	.8	2.0	1.3	.8	.7	.6	.5	.5	.6	.6	.5
.4	.4	.5	.4	.4	.5	.6	.9	1.0	.9	.9	.7	.4	.4	.4	.5	1.2	1.5	1.5	1.4	1.2	1.3	1.2	.6	.4	.9	.8	1.0	.8	.7	.9	.6	.6	.6	.6	.4
.5	.4	.7	.7	.7	.7	.7	.8	.7	.9	1.1	1.0	.8	.8	.8	.8	1.1	.9	.9	1.0	1.1	1.2	.7	.5	.7	.9	.8	.9	1.1	1.2	1.1	1.0	.8	.8	.7	.6
.7	.5	.6	.4	.4	.4	.4	.4	.4	.5	.9	.7	.6	.7	.7	.4	.4	.4	.4	.7	1.0	1.2	.5	.5	.6	.7	.9	1.0	1.1	1.0	1.0	1.1	1.0	1.1	1.0	.7
.7	.5	.5	.6	.4	.4	.4	.4	.4	.5	1.6	1.5	.6	.5	.6	.4	.4	.4	.4	.9	.7	.6	.7	.6	.4	.4	.5	.8	.7	.5	.7	.8	.7	.6	.9	.8
.8	.6	.6	.8	.7	.5	.4	.4	.5	.4	.7	1.9	.9	.7	.5	.5	.5	.5	.5	.9	1.0	.6	.6	.5	.4	.4	.5	.6	.6	.8	.6	.5	.6	.7	.6	.8
.6	.7	.6	.6	.8	.8	.6	.6	.7	.6	.9	.9	1.0	.8	.7	.6	.7	.7	.6	.6	.8	.6	.5	.6	.6	.7	.7	.6	.7	.7	.6	.7	.6	.7	.6	.8
.6	.6	.6	.6	.6	.6	.7	.7	.7	.6	.8	.7	.6	.6	.6	.6	.6	.7	.6	.7	.6	.6	.6	.6	.7	.7	.7	.7	.7	.6	.6	.6	.7	.5	.7	.7
.6	.6	.5	.5	.5	.5	.6	.5	.5	.5	.7	.7	.6	.5	.6	.5	.5	.6	.6	.6	.5	.5	.5	.6	.5	.5	.5	.6	.6	.5	.6	.6	.5	.5	.6	.6
.7	.7	.6	.7	.6	.6	.6	.6	.6	.6	.7	1.2	.7	.6	.5	.6	.6	.6	.7	.8	.7	.7	.9	1.1	.8	.7	.8	.9	1.1	1.0	1.1	1.0	.8	.7	.7	.7
1.0	.8	.9	1.0	1.3	1.5	1.4	1.3	1.3	1.3	1.2	1.4	.8	.7	.9	1.2	1.2	1.5	1.7	1.9	2.2	2.0	2.0	1.8	1.5	1.5	2.1	2.2	1.8	2.1	2.1	1.5	1.3	1.5	1.4	.8
1.2	1.1	1.1	1.2	1.1	1.2	1.4	1.9	1.9	.9	.8	.9	1.1	1.1	1.0	1.1	1.1	1.4	1.3	1.5	1.6	1.6	1.9	2.2	2.2	2.3	2.1	1.9	1.9	1.9	1.8	1.6	1.6	1.8	1.5	1.1

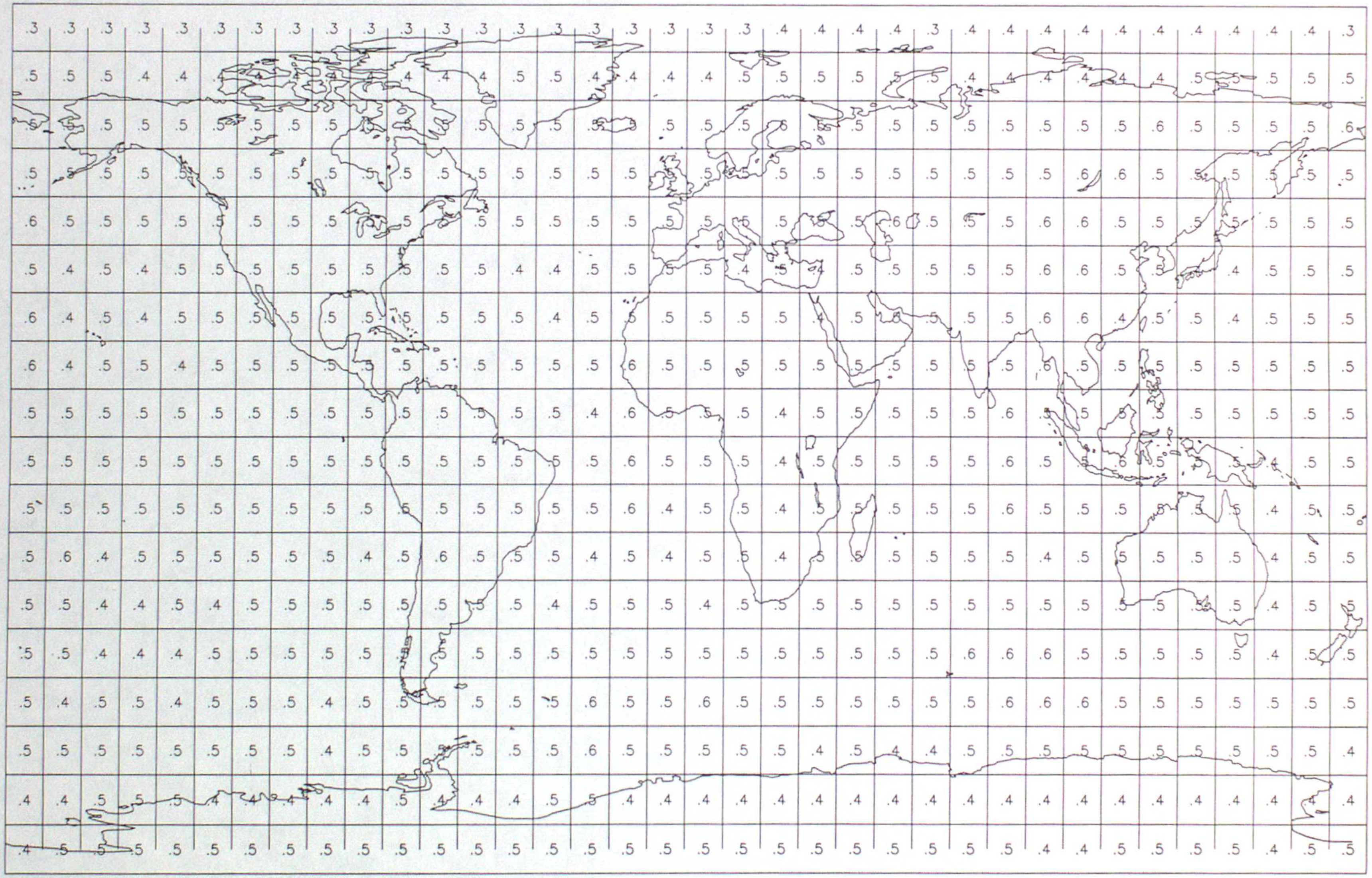
ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
JUNE 2000 : AMSUA-7 Channel (300 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 36



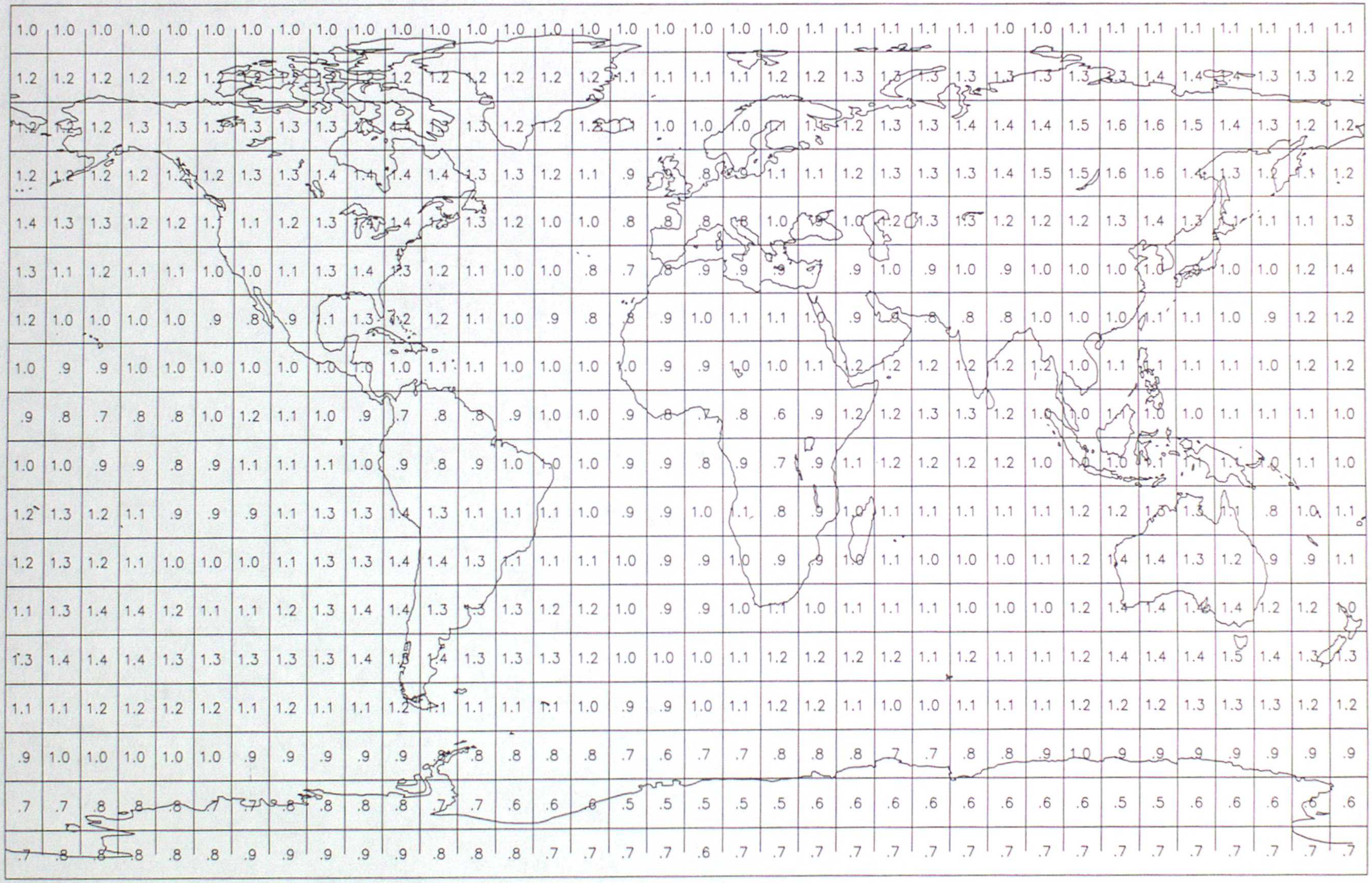
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
JUNE 2000 : AMSUA-7 channel (300 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 37


.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3
.5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .6
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .5
.6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .5 .5
.5 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .4 .5 .4 .5 .5 .5 .5 .5 .6 .6 .5 .5 .4 .5 .5 .5
.6 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .6 .6 .4 .5 .5 .4 .5 .5 .5
.6 .4 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .6 .5 .5 .5 .4 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .4 .5 .5 .5 .5 .5 .6 .5 .5 .6 .5 .5 .5 .4 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .4 .5 .5 .4 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .4 .5 .5
.5 .6 .4 .5 .5 .5 .5 .5 .5 .4 .5 .6 .5 .5 .5 .4 .5 .4 .5 .5 .4 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .4 .5 .5
.5 .5 .4 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5
.5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .5 .5 .5 .5 .5 .4 .5 .5
.5 .4 .5 .5 .4 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .6 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .4 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .5 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .4 .5 .5

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
JUNE 2000 : AMSUA-9 Channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 38


1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1
1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.1 1.1 1.1 1.1 1.2 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.4 1.4 1.4 1.3 1.3 1.2
1.2 1.2 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.4 1.3 1.3 1.2 1.2 1.2 1.1 1.0 1.0 1.0 1.1 1.1 1.2 1.3 1.3 1.4 1.4 1.4 1.5 1.6 1.6 1.5 1.4 1.3 1.2 1.2
1.2 1.2 1.2 1.2 1.2 1.2 1.3 1.3 1.4 1.4 1.4 1.4 1.3 1.3 1.2 1.1 .9 .9 .8 .9 1.1 1.1 1.2 1.3 1.3 1.3 1.4 1.5 1.5 1.6 1.6 1.4 1.3 1.2 1.1 1.2
1.4 1.3 1.3 1.2 1.2 1.1 1.1 1.2 1.3 1.4 1.4 1.3 1.3 1.2 1.0 1.0 .8 .8 .8 .8 1.0 .9 1.0 1.2 1.3 1.3 1.2 1.2 1.2 1.3 1.4 1.3 1.1 1.1 1.1 1.3
1.3 1.1 1.2 1.1 1.1 1.0 1.0 1.1 1.3 1.4 1.3 1.2 1.1 1.0 1.0 .8 .7 .8 .9 .9 .9 .7 .9 1.0 .9 1.0 .9 1.0 1.0 1.0 1.0 .9 1.0 1.0 1.2 1.4
1.2 1.0 1.0 1.0 1.0 .9 .8 .9 1.1 1.3 1.2 1.2 1.1 1.0 .9 .8 .8 .9 1.0 1.1 1.1 1.0 .9 .9 .8 .8 .8 1.0 1.0 1.0 1.1 1.1 1.0 .9 1.2 1.2
1.0 .9 .9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.1 1.0 1.0 1.0 1.0 .9 .9 1.0 1.0 1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.0 1.1 1.1 1.1 1.1 1.0 1.2 1.2
.9 .8 .7 .8 .8 1.0 1.2 1.1 1.0 .9 .7 .8 .8 .9 1.0 1.0 .9 .8 .7 .8 .6 .9 1.2 1.2 1.3 1.3 1.2 1.0 1.0 1.1 1.0 1.0 1.1 1.1 1.1 1.0
1.0 1.0 .9 .9 .8 .9 1.1 1.1 1.1 1.0 .9 .8 .9 1.0 1.0 1.0 .9 .9 .8 .9 .7 .9 1.1 1.2 1.2 1.2 1.2 1.0 1.0 1.0 1.1 1.1 1.1 1.0 1.1 1.0
1.2 1.3 1.2 1.1 .9 .9 .9 1.1 1.3 1.3 1.4 1.3 1.1 1.1 1.1 1.0 .9 .9 1.0 1.1 .8 .9 1.0 1.1 1.1 1.1 1.1 1.1 1.2 1.2 1.3 1.3 1.1 .8 1.0 1.1
1.2 1.3 1.2 1.1 1.0 1.0 1.0 1.1 1.3 1.3 1.4 1.4 1.3 1.1 1.1 1.1 1.0 .9 .9 1.0 .9 .9 1.0 1.1 1.0 1.0 1.0 1.1 1.2 1.4 1.4 1.3 1.2 .9 .9 1.1
1.1 1.3 1.4 1.4 1.2 1.1 1.1 1.2 1.3 1.4 1.4 1.3 1.3 1.3 1.2 1.2 1.0 .9 .9 1.0 1.1 1.0 1.1 1.1 1.1 1.0 1.0 1.0 1.2 1.4 1.4 1.4 1.4 1.2 1.2 1.0
1.3 1.4 1.4 1.4 1.3 1.3 1.3 1.3 1.3 1.4 1.3 1.4 1.3 1.3 1.3 1.2 1.0 1.0 1.0 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.1 1.1 1.2 1.4 1.4 1.4 1.5 1.4 1.3 1.3
1.1 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.1 1.1 1.2 1.1 1.1 1.1 1.1 1.0 .9 .9 1.0 1.1 1.2 1.2 1.1 1.0 1.0 1.1 1.1 1.1 1.2 1.2 1.2 1.3 1.3 1.3 1.2 1.2
.9 1.0 1.0 1.0 1.0 1.0 .9 .9 .9 .9 .9 .8 .8 .8 .8 .8 .7 .6 .7 .7 .8 .8 .8 .7 .7 .8 .8 .9 1.0 .9 .9 .9 .9 .9 .9 .9
.7 .7 .8 .8 .8 .7 .7 .8 .8 .8 .8 .7 .7 .6 .6 .6 .5 .5 .5 .5 .5 .6 .6 .6 .6 .6 .6 .6 .6 .5 .5 .6 .6 .6 .6 .6
.7 .8 .8 .8 .8 .8 .9 .9 .9 .9 .9 .8 .8 .8 .7 .7 .7 .7 .6 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
JUNE 2000 : AMSUA-9 channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 39

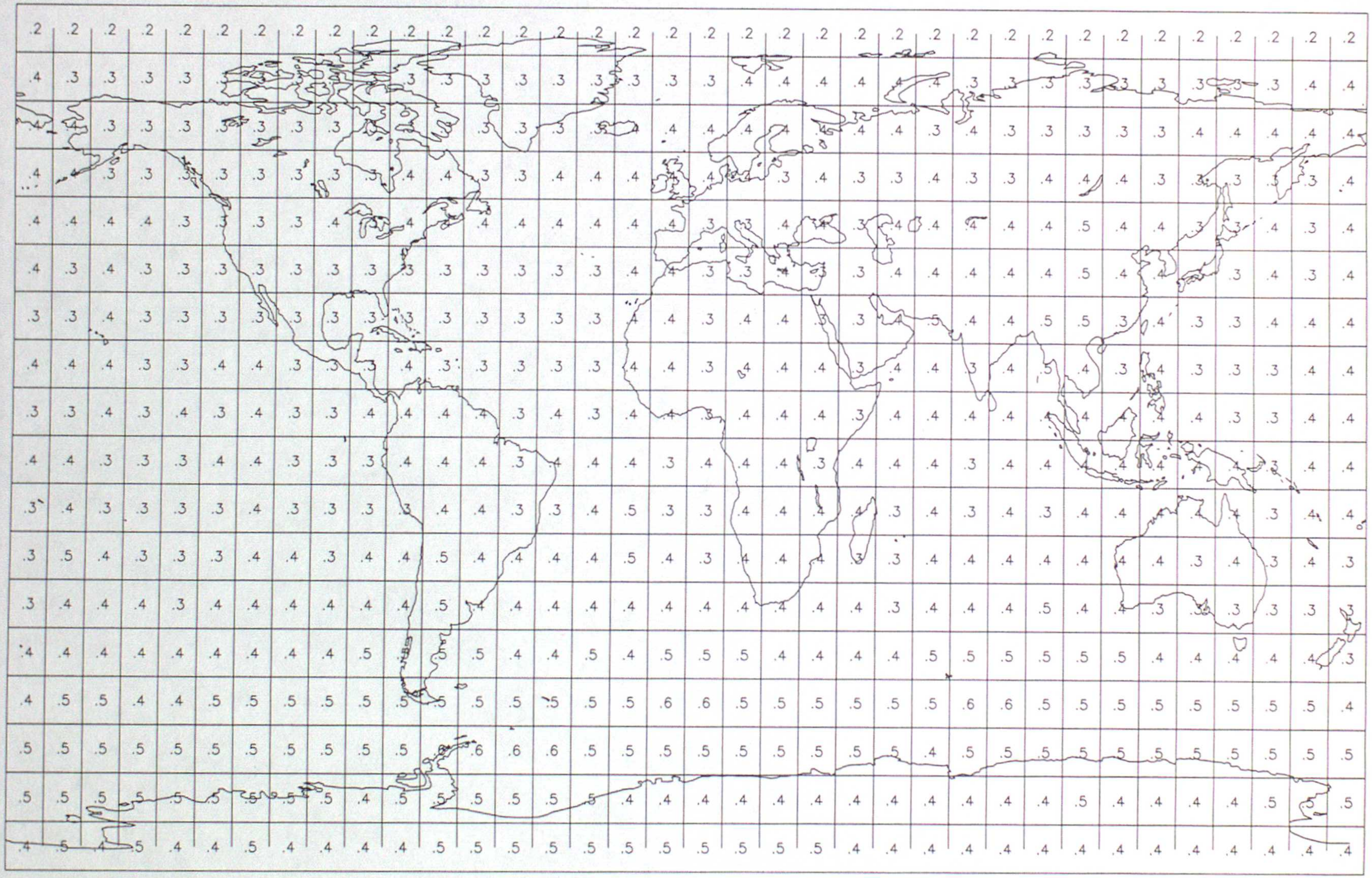


TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13501	18.7	-30.5	ALL	P	SUR	50	0	0	1.5	3.9	4.2
17601	26.7	-82.0	ALL	P	SUR	19	19	100			
41521	30.9	-68.6	ALL	P	SUR	313	0	0	0.5	0.3	0.6
41524	18.2	-72.1	ALL	P	SUR	184	0	0	0.8	1.1	1.3
41571	24.2	-49.1	ALL	P	SUR	492	0	0	0.4	0.7	0.8
41572	22.4	-41.1	ALL	P	SUR	533	0	0	0.5	0.5	0.7
41590	17.7	-44.3	ALL	P	SUR	522	0	0	0.5	0.6	0.8
41594	15.0	-46.6	ALL	P	SUR	530	0	0	0.4	0.6	0.8
41595	10.6	-51.0	ALL	P	SUR	537	0	0	0.5	0.7	0.8
41611	12.7	-41.3	ALL	P	SUR	510	0	0	0.5	0.6	0.7
41613	10.8	-34.9	ALL	P	SUR	487	0	0	0.6	0.4	0.7
41615	15.3	-39.4	ALL	P	SUR	497	0	0	0.5	0.5	0.7
41616	18.7	-37.3	ALL	P	SUR	528	0	0	0.5	0.6	0.8
41630	20.5	-53.2	ALL	P	SUR	327	0	0	0.5	0.6	0.8
41644	28.5	-41.8	ALL	P	SUR	336	0	0	0.5	0.0	0.5
41651	31.0	-68.0	ALL	P	SUR	410	0	0	0.7	2.9	3.0
44607	54.0	-29.0	ALL	P	SUR	585	0	0	1.3	-0.3	1.3
44608	32.7	-13.8	ALL	P	SUR	1375	1	0	0.6	0.0	0.6
44610	53.1	-33.6	ALL	P	SUR	1596	3	0	1.2	-0.1	1.2
44611	49.0	-33.6	ALL	P	SUR	593	1	0	0.8	-0.1	0.8
44612	36.2	-31.6	ALL	P	SUR	566	0	0	0.6	0.2	0.7
44613	24.6	-44.4	ALL	P	SUR	695	0	0	0.4	0.3	0.5
44615	32.9	-42.9	ALL	P	SUR	565	0	0	0.5	0.2	0.5
44617	48.3	-35.5	ALL	P	SUR	561	0	0	0.8	-0.1	0.9
44620	32.1	-43.0	ALL	P	SUR	565	0	0	0.4	0.3	0.5
44622	51.8	-43.2	ALL	P	SUR	606	0	0	1.1	-0.1	1.1
44623	44.2	-35.3	ALL	P	SUR	567	1	0	0.8	0.1	0.8
44626	47.2	-16.9	ALL	P	SUR	1394	2	0	1.1	0.1	1.1
44627	42.9	-26.1	ALL	P	SUR	1273	5	0	0.9	0.0	0.9
44628	40.5	-37.6	ALL	P	SUR	1180	7	1	0.7	0.2	0.8
44630	52.2	-19.9	ALL	P	SUR	1599	8	1	0.9	-0.1	0.9
44721	63.7	-52.8	ALL	P	SUR	2086	10	0	0.7	-0.2	0.7
44723	46.6	-30.6	ALL	P	SUR	559	0	0	0.8	-0.4	0.9
44724	41.5	-34.7	ALL	P	SUR	554	0	0	0.7	-0.2	0.7
44725	41.7	-53.9	ALL	P	SUR	299	0	0	0.6	-0.3	0.7
44726	29.9	-57.6	ALL	P	SUR	570	0	0	0.4	0.3	0.5
44727	33.9	-38.0	ALL	P	SUR	447	0	0	0.5	0.3	0.6
44729	50.0	-42.9	ALL	P	SUR	590	0	0	0.9	-0.2	0.9
44730	52.6	-38.8	ALL	P	SUR	617	0	0	1.2	0.1	1.2
44741	58.8	-32.3	ALL	P	SUR	576	0	0	0.9	0.4	0.9
44743	50.6	-34.2	ALL	P	SUR	852	0	0	0.9	-0.2	0.9
44744	43.8	-60.7	ALL	P	SUR	1	0	0	0.0	0.0	0.0
44760	54.6	-34.2	ALL	P	SUR	717	0	0	0.7	-0.3	0.8
44761	49.4	-46.5	ALL	P	SUR	440	0	0	0.7	0.0	0.7
44765	31.9	-56.1	ALL	P	SUR	527	2	0	0.7	0.1	0.7
44773	48.7	-26.4	ALL	P	SUR	1310	9	1	0.8	-0.4	0.9
44777	56.3	-17.0	ALL	P	SUR	34	2	6	0.6	-0.7	0.9
44807	43.5	-70.1	ALL	P	SUR	1	0	0	0.0	-2.1	2.1
44857	43.5	-70.1	ALL	P	SUR	1	0	0	0.0	-0.9	0.9
45805	41.7	-82.4	ALL	P	SUR	1	0	0	0.0	0.4	0.4
51502	38.3	-77.0	ALL	P	SUR	2	2	100			
51503	38.3	-77.1	ALL	P	SUR	2	2	100			
62507	34.2	-27.5	ALL	P	SUR	1111	9	1	0.7	-0.3	0.7
62508	39.7	-15.3	ALL	P	SUR	680	0	0	1.5	-0.5	1.6
62509	45.3	-6.5	ALL	P	SUR	1088	0	0	0.6	-0.2	0.6
62512	43.9	-21.8	ALL	P	SUR	253	0	0	1.1	-0.1	1.1
62513	45.6	-23.7	ALL	P	SUR	363	0	0	0.8	-0.8	1.1
62514	49.3	-18.1	ALL	P	SUR	602	1	0	0.9	0.1	0.9
62515	49.2	-14.6	ALL	P	SUR	592	0	0	0.7	0.3	0.8
62516	45.7	-23.5	ALL	P	SUR	615	0	0	0.8	0.0	0.8

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
62520	33.6	-38.5	ALL	P	SUR	1023	3	0	1.0	-0.5	1.1
62596	60.8	-24.0	ALL	P	SUR	627	0	0	0.7	-0.3	0.8
62597	52.6	-7.9	ALL	P	SUR	1587	7	0	0.9	0.0	0.9
62673	37.7	-10.4	ALL	P	SUR	298	0	0	0.5	-0.5	0.7
62675	35.8	-12.3	ALL	P	SUR	278	0	0	0.5	-0.4	0.7
62705	54.9	-12.6	ALL	P	SUR	1	0	0	0.0	-2.9	2.9
62722	36.3	-11.2	ALL	P	SUR	24	0	0	0.6	0.3	0.7
62723	35.9	-11.0	ALL	P	SUR	274	0	0	0.6	-0.8	1.0
62724	42.2	-8.8	ALL	P	SUR	235	0	0	0.9	-0.6	1.1
62725	33.1	-11.2	ALL	P	SUR	262	0	0	0.6	-0.4	0.7
62761	36.0	-11.1	ALL	P	SUR	299	0	0	0.6	-0.4	0.7
62762	35.9	-11.1	ALL	P	SUR	264	0	0	0.6	0.3	0.6
62763	37.5	-10.3	ALL	P	SUR	279	0	0	0.6	-0.6	0.8
62764	37.1	-8.9	ALL	P	SUR	3	0	0	0.3	0.3	0.5
62823	51.4	-7.9	ALL	P	SUR	1	0	0	0.0	0.1	0.1
62829	48.7	-12.4	ALL	P	SUR	1	0	0	0.0	0.6	0.6
62851	45.2	-5.0	ALL	P	SUR	1	0	0	0.0	0.1	0.1
64517	57.9	-20.6	ALL	P	SUR	1144	0	0	1.0	-0.5	1.1
64519	64.0	-22.6	ALL	P	SUR	611	0	0	0.7	-0.9	1.1
64520	63.7	-23.1	ALL	P	SUR	651	0	0	0.7	-0.7	1.0
64521	65.0	-25.6	ALL	P	SUR	194	0	0	0.7	-0.7	1.0
64546	49.1	-25.6	ALL	P	SUR	1207	11	1	1.4	-0.2	1.5
64548	59.4	-20.8	ALL	P	SUR	557	0	0	0.8	-0.6	1.0
64698	59.2	-33.0	ALL	P	SUR	1065	0	0	0.7	-0.5	0.9
64699	58.2	-55.6	ALL	P	SUR	1117	0	0	0.7	-0.4	0.8
64850	61.0	-2.7	ALL	P	SUR	1	0	0	0.0	1.6	1.6
65593	60.0	-30.9	ALL	P	SUR	733	0	0	0.7	-0.4	0.9
65598	61.4	-52.1	ALL	P	SUR	1471	12	1	1.2	-0.7	1.4
65599	59.2	-38.4	ALL	P	SUR	2148	6	0	0.8	0.0	0.8
65600	55.6	-32.9	ALL	P	SUR	735	0	0	1.2	-0.7	1.3
65601	60.2	-38.3	ALL	P	SUR	1388	11	1	1.5	-0.4	1.5
65602	61.0	-37.8	ALL	P	SUR	1548	3	0	1.1	-0.4	1.2
WIND SPEED											
41521	30.9	-68.6	ALL	SPEED	SUR	215	0	0	1.3	-1.1	1.7
41571	24.2	-49.1	ALL	SPEED	SUR	472	0	0	1.7	-0.2	1.7
41572	22.4	-41.1	ALL	SPEED	SUR	523	0	0	4.7	3.3	5.8
41590	17.7	-44.3	ALL	SPEED	SUR	513	0	0	1.1	0.2	1.1
41594	15.0	-46.6	ALL	SPEED	SUR	527	0	0	1.9	0.4	2.0
41595	10.6	-51.0	ALL	SPEED	SUR	330	0	0	4.7	-5.1	6.9
41611	12.7	-41.3	ALL	SPEED	SUR	504	0	0	1.2	-0.2	1.2
41613	10.8	-34.9	ALL	SPEED	SUR	480	0	0	1.8	0.5	1.9
41615	15.3	-39.4	ALL	SPEED	SUR	494	0	0	1.2	0.2	1.2
41616	18.7	-37.3	ALL	SPEED	SUR	527	0	0	1.5	0.3	1.5
41630	20.5	-53.2	ALL	SPEED	SUR	324	0	0	1.2	-1.9	2.3
41644	28.5	-41.8	ALL	SPEED	SUR	3	0	0	2.8	-1.0	3.0
41651	31.0	-68.0	ALL	SPEED	SUR	5	0	0	0.5	0.3	0.6
44607	54.0	-29.0	ALL	SPEED	SUR	575	0	0	2.1	1.3	2.5
44724	41.5	-34.7	ALL	SPEED	SUR	541	0	0	4.9	1.9	5.3
44726	29.9	-57.6	ALL	SPEED	SUR	565	0	0	1.6	-0.2	1.6
44744	43.8	-60.7	ALL	SPEED	SUR	1	0	0	0.0	6.0	6.0
44777	56.3	-17.0	ALL	SPEED	SUR	10	0	0	1.1	-2.6	2.9
62506	36.8	-26.5	ALL	SPEED	SUR	571	0	0	2.0	0.1	2.0
62508	39.7	-15.3	ALL	SPEED	SUR	647	0	0	1.3	0.0	1.3
62597	52.6	-7.9	ALL	SPEED	SUR	1452	0	0	1.9	-1.3	2.3
62705	54.9	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-0.3	0.3
62823	51.4	-7.9	ALL	SPEED	SUR	1	0	0	0.0	0.1	0.1
62829	48.7	-12.4	ALL	SPEED	SUR	1	0	0	0.0	-2.4	2.4
62851	45.2	-5.0	ALL	SPEED	SUR	1	0	0	0.0	-1.7	1.7
64850	61.0	-2.7	ALL	SPEED	SUR	1	0	0	0.0	-1.0	1.0

WIND DIRECTION

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
41521	30.9	-68.6	ALL	DIRN.	SUR	94	0	0	14.4	-9.1	17.0
41571	24.2	-49.1	ALL	DIRN.	SUR	317	0	0	11.0	9.6	14.6
41572	22.4	-41.1	ALL	DIRN.	SUR	485	0	0	13.5	10.2	16.9
41590	17.7	-44.3	ALL	DIRN.	SUR	512	0	0	10.2	0.2	10.2
41594	15.0	-46.6	ALL	DIRN.	SUR	525	0	0	17.8	17.5	25.0
41595	10.6	-51.0	ALL	DIRN.	SUR	55	0	0	8.5	1.4	8.6
41611	12.7	-41.3	ALL	DIRN.	SUR	503	0	0	9.5	14.1	17.0
41613	10.8	-34.9	ALL	DIRN.	SUR	455	0	0	12.8	-9.1	15.7
41615	15.3	-39.4	ALL	DIRN.	SUR	494	0	0	9.5	-8.5	12.7
41616	18.7	-37.3	ALL	DIRN.	SUR	518	0	0	9.8	-0.4	9.9
41630	20.5	-53.2	ALL	DIRN.	SUR	198	0	0	20.5	-12.6	24.1
44607	54.0	-29.0	ALL	DIRN.	SUR	414	0	0	16.1	-1.0	16.2
44724	41.5	-34.7	ALL	DIRN.	SUR	409	0	0	13.8	12.2	18.5
44726	29.9	-57.6	ALL	DIRN.	SUR	95	0	0	20.7	2.1	20.8
44744	43.8	-60.7	ALL	DIRN.	SUR	1	0	0	0.0	9.5	9.5
44777	56.3	-17.0	ALL	DIRN.	SUR	10	0	0	59.9	-18.1	62.6
62506	36.8	-26.5	ALL	DIRN.	SUR	158	0	0	18.6	3.5	18.9
62508	39.7	-15.3	ALL	DIRN.	SUR	363	0	0	12.6	-5.9	13.9
62597	52.6	-7.9	ALL	DIRN.	SUR	764	0	0	35.3	-1.6	35.4
62823	51.4	-7.9	ALL	DIRN.	SUR	1	0	0	0.0	-8.9	8.9
64850	61.0	-2.7	ALL	DIRN.	SUR	1	0	0	0.0	-0.2	0.2

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2865	0	4	1.5	-0.1	2837	0	5	0	7.8	1.1
ACA	1695	1	3	1.9	0.1	1707	0	2	0	6.4	0.9
AEA	244	0	6	2.1	0.0	249	1	7	0	8.7	1.5
AEL	183	1	18	1.8	-0.2	184	0	17	0	9.0	-0.3
AEY	40	0	3	1.9	1.0	39	0	5	0	9.0	0.8
AFL	377	1	3	2.0	0.3	376	0	4	0	8.0	0.6
AFR	1109	1	10	1.5	-0.1	1130	1	11	0	7.1	0.7
AIH	122	2	4	1.5	0.0	127	0	2	0	5.2	0.5
AJM	128	0	6	1.9	-0.8	132	0	8	0	9.4	1.0
AMM	73	0	7	1.4	0.6	71	0	10	0	9.0	1.1
AMX	177	1	4	1.7	0.3	177	2	7	0	8.9	0.9
ANZ	182	1	19	2.1	-1.1	182	0	18	0	6.9	0.7
AOM	403	1	5	1.7	0.5	417	0	6	0	7.6	1.0
AVA	181	1	3	1.9	0.5	187	1	2	0	6.5	0.4
AZA	459	2	6	2.0	0.4	458	0	6	0	8.3	0.9
BAL	171	1	16	1.4	-0.3	172	0	18	0	7.7	0.8
BAW	1157	0	7	1.9	0.2	1159	0	7	0	6.2	0.8
BLX	23	0	9	1.7	-0.9	23	0	4	0	7.9	0.7
BWA	64	0	2	2.1	1.5	66	0	8	0	10.9	2.4
CDN	494	0	1	1.6	-0.1	499	0	2	0	5.8	0.4
CFG	333	0	2	1.8	-1.0	333	0	3	0	7.4	0.6
CLX	315	0	1	1.8	-0.3	317	1	3	0	7.1	0.3
CMM	447	0	2	1.6	0.2	446	0	1	0	4.3	0.3
COA	437	0	4	1.5	0.0	447	0	9	0	11.2	1.9
CRL	254	1	3	1.5	0.5	256	0	4	0	6.8	0.5
CTB	63	0	0	1.0	0.0	64	0	2	0	6.4	0.8
CUB	64	2	2	1.4	0.9	64	0	0	0	7.8	1.3
DAL	1518	0	15	1.6	-0.3	1533	0	17	0	8.3	0.8
DBY	324	0	3	1.5	-0.6	325	1	3	0	6.9	0.8
DCS	44	2	7	1.5	0.1	43	0	7	0	6.1	0.7
DLH	1446	0	5	1.7	-0.1	1423	0	6	0	6.0	0.9
EEZ	39	0	100	1.7	0.5	40	0	10	0	7.3	0.0
EIN	39	0	0	1.1	0.3	39	0	3	0	7.1	0.1
ELY	192	1	4	1.4	-0.1	197	0	3	0	7.2	1.0
EWW	148	0	4	1.4	0.0	150	0	5	0	7.7	1.3
FDX	657	0	5	1.5	0.2	677	0	6	0	7.6	0.9
FIN	382	0	2	1.4	0.4	367	0	3	0	6.7	0.8
GAF	126	0	3	1.6	0.1	124	0	5	0	7.6	1.2
GCO	131	1	8	1.7	0.0	131	1	41	0	19.3	3.3
GRL	62	0	2	1.3	0.4	61	2	5	0	4.8	-0.4
GTI	170	0	11	2.0	-0.3	170	0	12	0	8.9	0.8
HLF	49	0	4	1.3	-0.8	48	0	8	0	10.0	-1.0
IBE	1201	0	12	1.6	0.5	1181	0	13	0	8.6	0.8
ICE	1109	0	3	1.6	0.2	1078	0	5	0	7.5	0.9
IWD	30	0	3	0.8	-0.4	30	3	7	0	7.2	0.7
JKK	200	1	4	1.3	0.0	187	0	8	0	9.6	-0.2
JMC	133	0	11	1.9	1.2	133	1	11	0	7.0	1.1
KLM	1681	0	7	1.6	0.3	1695	0	8	0	7.1	0.7
LDA	73	1	7	1.8	0.0	73	0	5	0	7.7	0.8
LDI	291	0	100	1.7	-1.1	295	0	6	0	7.1	0.1
LIB	145	1	4	1.7	0.8	146	1	6	0	10.3	-0.6
LOT	259	0	2	1.7	-0.9	259	0	4	0	6.8	0.9
LTU	486	0	7	1.9	-0.1	484	0	6	0	7.0	0.7
MAS	63	2	8	1.4	0.4	61	0	8	0	7.4	2.2
MON	105	0	2	1.2	0.0	103	2	5	0	5.0	1.2
MPD	116	0	2	1.3	0.1	118	1	3	0	6.4	1.6
MPH	635	0	3	2.0	-0.7	636	0	4	0	7.7	0.9
NCA	31	0	0	1.5	0.8	30	0	0	0	5.5	0.0
NWA	4054	0	2	1.8	0.5	3987	0	2	0	7.1	1.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
PAC	156	1	9	1.5	-0.1	156	0	9	0	6.7	0.8
RAM	39	5	10	1.7	-0.5	38	0	5	0	8.8	0.2
RCH	88	0	7	1.6	0.5	94	0	15	0	11.7	0.7
RJA	79	0	5	1.8	-0.5	80	0	5	0	8.0	1.6
ROY	171	1	8	1.7	-0.4	176	1	14	0	12.4	0.8
RRR	188	1	5	1.6	0.1	191	0	7	0	8.6	0.9
RZO	112	0	5	1.4	-0.5	112	0	6	0	7.7	0.5
SAS	1402	0	31	1.6	-0.1	1396	0	32	0	6.5	1.0
SIA	112	0	4	1.8	-0.6	113	2	5	0	6.2	-0.6
SLR	129	0	14	1.6	-1.1	133	1	16	0	6.3	0.7
SNB	37	0	3	2.0	-0.3	40	0	3	0	7.1	-0.8
SVA	131	0	3	2.0	-0.2	139	0	6	0	7.9	1.2
SWR	28	0	4	2.2	0.8	29	0	3	0	5.6	0.7
TAP	385	1	5	1.6	-0.3	385	0	5	0	6.8	0.9
TCU	21	0	0	1.5	-1.0	22	0	5	0	10.0	1.3
TSC	204	1	2	1.9	0.8	207	0	6	0	10.7	3.3
TWA	717	0	5	1.8	0.0	689	0	7	0	9.0	1.1
UAL	1967	0	100	1.8	-0.1	1995	0	100	0	6.3	0.8
UPS	637	0	11	1.6	0.2	644	0	12	0	8.4	0.9
USA	203	3	5	1.7	0.3	169	0	3	0	6.5	1.3
VIR	542	1	3	1.5	-0.2	541	0	4	0	7.4	1.1
VKG	43	0	5	1.7	0.1	43	0	5	0	5.8	-1.0
WOA	152	1	7	1.4	0.2	153	0	7	0	6.1	0.8
BA	193	0	7	1.2	0.6	190	0	8	0	4.3	0.7
EU	16911	0	17	1.5	0.0	16911	0	16	0	4.9	0.6
KL	2629	0	16	1.4	0.9	2613	0	16	0	5.3	1.2
LH	478	0	5	1.6	1.1	476	0	5	0	4.9	0.6
N	459	2	5	2.6	1.2	481	0	2	0	7.6	0.9
US ACARS	15249	0	20	1.4	0.6	15243	0	19	0	5.2	0.6

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBLK	12	Z	100	14	0	13.6	18.0	11.8
ELML7	00	Z	100	18	0	11.8	25.4	22.4
ELML7	12	Z	100	19	0	14.8	25.4	20.6
FNOR	00	Z	100	9	0	15.0	27.8	23.4
FNOR	12	Z	100	10	0	9.9	19.1	16.3
FNOU	00	Z	100	13	0	9.0	31.5	30.2
FNOU	12	Z	100	14	0	11.9	26.0	23.1
FNPH	00	Z	100	11	0	7.6	19.7	18.2
FNPH	12	Z	100	12	0	15.0	17.1	8.3
FNRS	00	Z	100	13	0	16.1	35.6	31.8
FNRS	12	Z	100	12	0	12.9	25.6	22.2
LDWR	00	Z	100	23	0	8.0	8.0	0.8
LDWR	12	Z	100	28	0	11.1	11.3	-2.1
OVYA2	00	Z	100	11	0	14.8	19.7	13.0
OVYA2	12	Z	100	12	1	16.1	17.6	7.3
OXYH2	00	Z	100	15	0	13.9	14.1	2.5
OXYH2	12	Z	100	23	0	12.9	13.2	2.5
SHIPCH	00	Z	100	2	0	33.5	35.4	-11.5
SHIPCH	12	Z	100	2	0	12.0	89.8	89.0
SHIPCK	00	Z	100	1	0	0.0	5.0	-5.0
SHIPCK	12	Z	100	3	0	11.1	51.5	50.3
S6LA	00	Z	100	5	0	12.4	23.9	20.4
S6LA	12	Z	100	2	0	7.0	22.1	21.0
ZCBP6	00	Z	100	5	0	6.2	10.6	8.6
ZCBP6	12	Z	100	6	0	25.9	29.5	14.0
03953	00	Z	100	29	0	13.9	27.8	24.1
03953	12	Z	100	29	0	11.2	19.6	16.1
04018	00	Z	100	28	0	11.1	14.7	9.6
04018	12	Z	100	28	0	11.3	12.8	5.9
04220	00	Z	100	28	0	7.6	24.1	22.9
04220	12	Z	100	30	0	10.1	14.6	10.5
04270	00	Z	100	28	0	9.4	10.9	5.5
04270	12	Z	100	29	0	10.5	10.5	-1.0
04339	00	Z	100	29	0	7.7	21.4	20.0
04339	12	Z	100	28	0	9.0	19.6	17.4
04360	00	Z	100	29	0	7.8	12.5	9.8
04360	12	Z	100	29	0	10.9	13.2	7.5
08001	00	Z	100	26	1	18.6	19.9	7.1
08001	12	Z	100	28	1	37.4	37.5	3.3
08508	00	Z	100	28	0	10.5	32.0	30.2
08508	12	Z	100	30	0	12.0	26.6	23.8
08522	12	Z	100	29	0	10.5	14.5	10.0
08594	12	Z	100	8	0	7.6	23.9	22.6
60020	00	Z	100	1	0	0.0	38.0	38.0
60020	12	Z	100	1	0	0.0	39.0	39.0
71600	00	Z	100	29	0	16.4	20.7	12.6
71600	12	Z	100	30	0	13.9	17.3	10.4
72201	00	Z	100	28	0	14.4	31.9	28.5
72201	12	Z	100	28	0	16.4	24.5	18.2
72402	00	Z	100	27	0	11.8	52.6	51.3
72402	12	Z	100	29	0	17.6	58.1	55.4
74494	00	Z	100	24	0	12.7	14.8	7.6
74494	12	Z	100	23	0	11.6	11.6	-1.4
78016	00	Z	100	29	0	11.2	41.7	40.2
78016	12	Z	100	28	0	9.9	42.5	41.3

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBLK	12	Z	500	14	0	8.2	9.6	4.9
ELML7	00	Z	500	21	0	8.9	10.7	6.0
ELML7	12	Z	500	23	0	8.6	11.2	7.2
FNOR	00	Z	500	12	0	11.5	13.9	7.9
FNOR	12	Z	500	11	0	8.6	14.9	12.2
FNOU	00	Z	500	14	0	7.0	11.3	8.9
FNOU	12	Z	500	15	0	9.9	14.2	10.2
FNPH	00	Z	500	11	0	5.0	7.2	5.2
FNPH	12	Z	500	13	0	7.8	9.8	5.9
FNRS	00	Z	500	14	0	7.4	12.2	9.7
FNRS	12	Z	500	14	0	8.1	14.2	11.6
LDWR	00	Z	500	24	0	7.4	7.8	-2.7
LDWR	12	Z	500	29	0	8.3	9.2	-4.1
OVYA2	00	Z	500	12	0	13.4	17.1	10.7
OVYA2	12	Z	500	13	1	13.1	15.1	7.5
OXYH2	00	Z	500	18	0	6.8	7.2	2.3
OXYH2	12	Z	500	24	0	9.0	9.0	-0.6
SHIPCH	00	Z	500	2	0	44.5	54.5	-31.5
SHIPCH	12	Z	500	2	0	8.5	26.9	25.5
SHIPCK	00	Z	500	4	0	33.0	40.8	-24.0
SHIPCK	12	Z	500	4	0	6.8	14.7	13.0
S6LA	00	Z	500	5	0	4.7	6.3	4.2
S6LA	12	Z	500	3	0	6.2	14.4	13.0
ZCBP6	00	Z	500	7	0	22.7	22.8	2.7
ZCBP6	12	Z	500	6	0	15.4	15.9	4.0
03953	00	Z	500	29	0	8.0	11.1	7.7
03953	12	Z	500	30	0	8.8	10.4	5.5
04018	00	Z	500	28	0	8.8	12.0	8.2
04018	12	Z	500	30	0	10.7	12.5	6.5
04220	00	Z	500	28	0	6.6	14.5	13.0
04220	12	Z	500	30	0	8.5	11.7	8.0
04270	00	Z	500	28	0	7.9	8.6	3.4
04270	12	Z	500	30	0	10.2	10.2	1.0
04339	00	Z	500	29	0	6.9	13.8	12.0
04339	12	Z	500	28	0	7.7	14.4	12.2
04360	00	Z	500	29	0	9.4	10.7	5.1
04360	12	Z	500	29	0	9.1	9.8	3.6
08001	00	Z	500	26	1	9.7	9.8	-1.1
08001	12	Z	500	28	1	13.3	13.5	-1.9
08508	00	Z	500	29	0	7.5	8.8	4.5
08508	12	Z	500	30	0	8.9	10.5	5.6
08522	12	Z	500	29	0	8.2	9.0	3.5
08594	12	Z	500	9	0	4.5	8.3	7.0
60020	00	Z	500	28	0	10.5	17.2	13.7
60020	12	Z	500	29	0	6.3	15.3	14.0
71600	00	Z	500	29	0	9.0	10.2	4.6
71600	12	Z	500	30	0	9.4	13.0	9.0
72201	00	Z	500	29	0	6.9	6.9	0.1
72201	12	Z	500	28	0	8.1	11.2	-7.7
72402	00	Z	500	27	0	5.8	14.9	13.7
72402	12	Z	500	29	0	8.5	13.0	9.8
74494	00	Z	500	26	0	7.1	7.4	2.3
74494	12	Z	500	26	0	6.0	7.5	4.5
78016	00	Z	500	29	0	5.8	18.3	17.4
78016	12	Z	500	28	0	9.0	22.3	20.4

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBLK	12	V	100	13	0	0	4.8	0.5	0.0
ELML7	00	V	100	16	0	0	5.4	2.3	0.0
ELML7	12	V	100	19	0	0	5.8	1.9	1.3
FNOR	00	V	100	12	0	0	3.5	0.1	1.3
FNOR	12	V	100	10	0	0	4.4	-1.7	0.8
FNOU	00	V	100	15	0	0	4.1	0.4	0.6
FNOU	12	V	100	12	0	0	5.0	-0.1	-1.3
FNPH	00	V	100	8	0	0	3.7	1.0	1.4
FNPH	12	V	100	10	0	0	4.4	-0.7	-1.6
FNRS	00	V	100	9	0	0	4.2	1.4	0.1
FNRS	12	V	100	9	0	0	3.8	0.0	-0.3
LDWR	00	V	100	22	0	0	2.2	0.2	0.4
LDWR	12	V	100	27	0	0	1.6	0.0	0.1
OVYA2	00	V	100	12	0	0	3.2	-1.0	0.2
OVYA2	12	V	100	10	0	0	2.5	0.4	-0.5
OXYH2	00	V	100	12	0	0	3.1	0.9	0.8
OXYH2	12	V	100	12	0	0	2.5	0.7	-0.2
SHIPCH	00	V	100	2	1	50	76.5	-46.4	8.7
SHIPCH	12	V	100	1	0	0	6.3	-5.6	2.8
SHIPCK	00	V	100	3	0	0	2.1	0.2	0.7
S6LA	00	V	100	6	0	0	3.4	0.8	-1.9
S6LA	12	V	100	2	0	0	3.2	1.7	-1.2
ZCBP6	00	V	100	4	0	0	4.4	1.4	-1.1
ZCBP6	12	V	100	2	0	0	3.1	-2.2	-1.6
03953	00	V	100	29	0	0	4.1	-0.5	0.4
03953	12	V	100	28	0	0	2.5	-0.4	0.1
04018	00	V	100	26	0	0	2.2	0.5	0.0
04018	12	V	100	28	0	0	2.4	0.5	0.3
04220	00	V	100	29	0	0	2.2	-0.4	0.4
04220	12	V	100	29	0	0	2.7	0.0	0.3
04270	00	V	100	27	0	0	2.9	-0.3	-0.7
04270	12	V	100	29	0	0	2.8	1.2	-0.3
04339	00	V	100	29	0	3	5.2	-0.5	0.3
04339	12	V	100	27	0	3	4.8	-1.0	1.2
04360	00	V	100	29	0	3	5.2	-0.1	0.4
04360	12	V	100	28	0	0	2.1	0.2	0.2
08001	00	V	100	27	0	0	4.5	0.3	0.3
08001	12	V	100	28	0	0	4.0	0.3	0.0
08508	00	V	100	22	0	0	4.0	-0.3	1.2
08508	12	V	100	22	0	0	3.8	0.0	0.4
08522	12	V	100	29	0	0	5.6	1.8	0.3
60020	00	V	100	2	0	0	6.4	-3.4	-2.9
60020	12	V	100	1	0	0	5.3	-2.9	4.5
71600	00	V	100	30	0	0	4.3	0.7	-0.2
71600	12	V	100	30	0	0	4.6	0.4	-0.6
72201	00	V	100	29	0	0	3.1	0.7	-0.2
72201	12	V	100	28	0	0	3.0	0.6	-0.2
72402	00	V	100	28	0	0	3.7	0.0	1.1
72402	12	V	100	29	0	0	4.3	-0.1	1.2
74494	00	V	100	24	0	0	2.9	0.5	1.2
74494	12	V	100	23	0	0	3.6	-0.8	1.1
78016	00	V	100	29	0	0	5.0	-0.8	1.4
78016	12	V	100	25	0	0	4.6	1.3	-0.2

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: JUNE 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBLK	12	V	500	14	0	0	4.0	-0.3	0.6
ELML7	00	V	500	22	0	0	4.0	0.0	0.2
ELML7	12	V	500	23	0	0	3.3	-0.4	0.3
FNOR	00	V	500	13	0	0	3.7	-0.1	0.8
FNOR	12	V	500	10	0	0	4.1	0.1	0.0
FNOU	00	V	500	14	0	0	3.9	0.5	-0.5
FNOU	12	V	500	13	0	0	5.2	-0.7	1.8
FNPH	00	V	500	8	0	0	3.5	0.7	1.7
FNPH	12	V	500	10	0	0	3.9	2.7	0.5
FNRS	00	V	500	9	0	0	3.5	0.1	0.2
FNRS	12	V	500	10	0	0	4.7	1.0	0.9
LDWR	00	V	500	25	0	0	3.3	0.4	0.3
LDWR	12	V	500	29	0	0	3.4	-0.7	-0.5
OVYA2	00	V	500	13	0	0	4.2	-0.4	1.4
OVYA2	12	V	500	12	0	0	3.4	0.4	0.1
OXYH2	00	V	500	17	0	0	2.9	-1.0	0.3
OXYH2	12	V	500	19	0	0	4.3	-1.3	1.2
SHIPCH	00	V	500	3	0	0	5.0	2.1	1.2
SHIPCH	12	V	500	2	0	0	1.5	0.0	-0.6
SHIPCK	00	V	500	5	1	20	28.8	-1.8	14.6
SHIPCK	12	V	500	3	0	0	4.7	-1.9	3.0
S6LA	00	V	500	6	0	0	7.2	1.4	2.6
S6LA	12	V	500	3	0	0	4.1	0.9	-3.0
ZCBP6	00	V	500	6	0	0	2.5	0.0	0.4
ZCBP6	12	V	500	3	0	0	2.5	-0.7	0.8
03953	00	V	500	30	0	0	3.6	-0.4	0.4
03953	12	V	500	30	0	0	3.8	1.2	-0.7
04018	00	V	500	29	0	0	2.8	-0.5	0.0
04018	12	V	500	30	0	0	3.6	-0.1	-0.4
04220	00	V	500	29	0	0	3.4	-0.6	0.4
04220	12	V	500	29	0	0	3.3	0.2	0.4
04270	00	V	500	28	0	0	4.3	-1.3	-0.3
04270	12	V	500	29	0	0	3.8	-0.9	1.6
04339	00	V	500	29	0	0	4.2	-0.9	0.3
04339	12	V	500	28	0	0	2.9	0.4	-0.1
04360	00	V	500	29	0	0	3.6	-0.1	0.2
04360	12	V	500	29	0	0	3.3	-0.4	0.4
08001	00	V	500	27	0	0	4.0	1.0	0.4
08001	12	V	500	29	0	0	4.1	0.3	-0.4
08508	00	V	500	21	0	0	3.7	0.0	-0.3
08508	12	V	500	22	0	0	3.8	-0.1	-0.1
08522	12	V	500	29	0	0	4.0	0.6	-0.2
60020	00	V	500	28	0	0	4.7	1.4	-0.1
60020	12	V	500	25	0	0	4.0	0.2	-0.3
71600	00	V	500	30	0	0	3.1	0.5	-0.1
71600	12	V	500	30	0	0	3.3	-0.1	0.1
72201	00	V	500	29	0	0	2.8	0.5	-0.7
72201	12	V	500	28	0	0	3.3	-1.0	0.1
72402	00	V	500	27	0	0	2.9	0.0	0.4
72402	12	V	500	29	0	0	3.3	-0.2	1.2
74494	00	V	500	27	0	0	2.7	0.0	1.0
74494	12	V	500	26	0	0	3.3	-1.1	1.4
78016	00	V	500	30	0	0	3.6	-1.4	0.0
78016	12	V	500	28	0	0	3.1	-0.4	0.2

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45